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TROPICAL MYCOSES

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Tropical diseases, and particularly those involving the skin which are due to the higher fungi, are going to occupy the attention of the medical profession both at home and abroad, in the civilian population as well as in the military or naval services, more and more, the longer the war lasts. Rare mycotic infections which are unusual in this country will gradually be recognized as commonplace, while exaggerated clinical manifestations of the commoner fungous diseases of the skin, already well known to us but aggravated by their origin in the tropics, are now being seen in large numbers in men returning from the South Pacific areas.

All physicians should be aware of the possibility of the occurrence of these conditions here at home and be able to recognize them and stamp them out before they can become endemic.

It has been definitely proved that many of the more serious systemic fungous diseases begin with nodules or ulcers on the skin. Also that, if the skin lesions are recognized early and the proper diagnosis is made, treatment will in most instances prevent a general dissemination of the disease, which very frequently results in death.

Although there still exists a certain amount of confusion with regard to the classification of the parasites of the ascomycetes and the hyphomycetes group which cause these diseases, their morphology, cultural characteristics and occurrence in the lesions are so well understood that early diagnosis and the institution of early treatment should be within the scope of all physicians both at home and in the services.

Tropical mycoses are due mainly to the so-called higher fungi and may be divided into two classes:

First, the Ascomycetes (fungi that produce an ascus [sac] to hold spores): (*a*) piedra (trichosporosis), (*b*) rhinosporidiosis, (*c*) lymphangitis epizootica, (*d*) histoplasmosis.

Second, the Hyphomycetes (fungi imperfecti): (*a*) pityriasis versicolor (tinea versicolor), (*b*) erythrasma, (*c*) trichophyton infections of the glabrous skin, (*d*) epidermophyton infections of the glabrous skin, (*e*) epidermomycoses originating only in the tropics: (1) endodermophytoses, (2) cladosporian dermatoses, (3) aleurosporian dermatoses, (4) two dermatoses probably due to trichophytons.

THE ASCOMYCETES

Piedra (trichosporosis).—This is a fungous disease involving the exterior of the shaft of the hair, particularly of the scalp and beard. It consists in the formation of tiny dark or light brown stony, hard nodules, scarcely perceptible to the eye, but which can be definitely felt when the hair is drawn between the fingers (McCarthy [1]). It occurs in Europe, Asia and Japan as well as in South America (Colombia) and is thought to arise in persons who wash their hair and beard in stagnant river water and then apply a thick oily or mucilaginous substance as a hair dressing. After the hairs are soaked over night in 20 per cent potassium hydroxide solution, the nodes are seen to be made up of a large number of closely packed contoured spores.

The mycologic aspect of this disorder has been studied in detail by Bodin,[2] Vuillemin,[3] Schaechter,[4] Lombardo,[5] Lampe [6] and others. It is generally agreed that the parasite is a fungus and should be classified as a member of the ascomycetes group. Trichosporum giganteum, Trichosporum beigeli, Trichosporum ovoides and Trichosporum ovale have been commonly reported from the different regions in which the disease occurs. Chalmers [7] has reported a form of piedra which he calls trichonocardiasis, which is due to a species of Nocardia (actinomyces). All these parasites grow slowly on Sabouraud's medium but better on carrots.

Trichosporosis must not be mistaken for trichorrhexis nodosa, a nonparasitic involvement of the hair shaft in which the hair is fractured transversely, resulting in a splitting of the ends into brushlike bundles of fibers. It should not be confused with monilethrix, which is nonparasitic and is congenital and hereditary and often the result of congenital syphilis. Trichosporosis differs from leptothrix by its regional distribution, color and type of parasites, which are cocci or bacteria. Nits project off at an angle from the shaft, while in trichosporosis the shaft is more or less completely surrounded. In treatment the hair should be cleansed with benzine or ether or acetone. A 1 to 1,000 solution of mercury bichloride or a 3 per cent sulfur and a 3 per cent salicylic acid ointment can be effectively applied. Shaving

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This paper, in a symposium on "Tropical Diseases of the Skin," is published under the auspices of the Section on Dermatology and Syphilology.

This portion of the symposium is presented as a review of the latest monographs on fungous diseases arising in the tropics with certain conclusions reached after a year's experience with men returning from the tropics.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

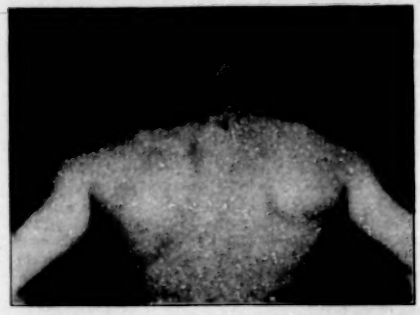
1. McCarthy, Lee: Diseases of the Hair, St. Louis, C. V. Mosby Company, 1940, p. 309.
2. Bodin: La pratique dermatologique, Paris, Masson & Cie, 1904, vol. 2, p. 239.
3. Vuillemin: Un cas de piedra nostras, Acad. d. sc., Paris, June 6, 1901.
4. Schaechter: De la trichosporie (piedra), Thèse de Nancy, 1901.
5. Lombardo: Sulla piedra nostras, Gior. ital. d. mal. ven., 1904, p. 308.
6. Lampe, P. H. J.: Piedra in Batavia, Geneesk. tijdschr. v. Nederl-Indië 80:1319, 1940.
7. Chalmers, quoted by Stitt in Diagnosis and Prevention and Treatment of Tropical Diseases, ed. 6, Philadelphia, Blakiston Company, 1942, vol. 2, p. 1151.

of the part, with application of the bichloride solution, is a rapid, effective method when it is possible to use it.

Rhinosporidiosis.—This is a fungous disease chiefly of the mucous membranes of the nose with the production of polyps. Recent reports show that the ears, lacrimal sac, uvula and the mucosa of the penis may be involved. The causative organism, Rhinosporidium seeberi, was at first thought to be a coccidial parasite, which it closely resembles, but it is now known to be a true fungus and is found in large numbers within the soft, raspberry-like growths it causes. It has been reported from Cochin China, South America and the United States.

The mode of transmission of the disease is not known, but a closely related disease due to Rhizopus equi has been reported in horses in these regions. Treatment consists in removal of the polyps with a wire snare from the nose and destruction with electrocoagulation of the tumors from other regions, combined with the use of antimony and potassium tartrate.

Lymphangitis Epizootica.—According to Stitt[8] human beings working with horses suffering with this



Achromatic, punctate type of tinea versicolor acquired in the tropics.

fungous disease may develop nodules and ulcerations of the skin in areas rich in lymphatics. Cases have been reported from Asia (India, China and Japan), western Europe and northern Africa. Man appears to be only an accidental host, and no visceral or system involvement has been reported. The organism is a cryptococcus of the farciminosus or pschrophylicus type and has been easily cultivated at 22 C. and successfully inoculated in guinea pigs, rats and white mice by Nino.[9] Treatment consists in early incision and curettage of all the lesions combined with the use of arsenicals intravenously.

Histoplasmosis.—Although the causative agent, Histoplasma capsulatum, usually produces a serious systemic disease with involvement of the deeper organs, the infection may begin on the skin as nodules and ulcers, particularly on the face. An early diagnosis, with excision and curettage of the lesions, combined with the use of fuadin, arsphenamine or antimony and potassium tartrate, may prevent systemic involvement, which often has a fatal termination. The disease, when well developed, resembles the clinical picture of kala-azar. It has been reported from South and Central America (Panama), North Africa and Asia, as well as in the United States. In cultures and in smear preparations the parasite resembles a cryptococcus, and Benham has suggested the name Cryptococcus hominis for the organism.

8. Stitt, E. R.: Diagnosis and Treatment of Tropical Diseases, ed. 6, Philadelphia, Blakiston Company, 1942, vol. 3, p. 1158.
9. Nino, F. L., quoted by Stitt: Diagnosis and Treatment of Tropical Diseases, p. 1139.

THE HYPHOMYCETES

The Hyphomycetes are less perfect fungi than the Ascomycetes in that they do not produce a sac at the end of a hypha to hold their spores but exist as a mass of ramifying, threadlike filaments (hyphae), which is called the mycelium. Reproduction and growth take place by the lateral, angular or terminal addition of new hyphae or by the division of a single hypha.

Pityriasis Versicolor.—This is widespread and, therefore the best known of the epidermomycoses. It occurs in temperate climates about as often as in the tropics, but in hot countries the eruption varies somewhat in color and in distribution. Instead of the typical café-au-lait colored, scaly, greasy macules, one may find three atypical clinical expressions of the disease: (1) the red, or erythematous, form, (2) the circinate erythematous and squamous form and (3) the achromatic form. It is believed that these types are due to excessive sun, heat and humidity and really represent different degrees of the brown type, for the red and achromatic lesions become the usual brown type once the patient leaves the tropics. Again, the brown type may be found on the covered parts of the body, along with the red or achromatic types on the exposed portions. The same parasite, Microsporum furfur, can be obtained in all variants.

The achromia is an actual depigmentation rather than an impression gained by contrasting normal and abnormal skin areas. It is thought to be due to three factors: (1) the screening action of the scales, (2) the decoloring action of the sun and (3) the disturbance in pigment function of the skin due to the toxins produced by such large numbers of fungi.

Clinical variations of all the different types may be seen frequently in the tropics. The eruption may be limited to only the face or the scalp or to the backs of the hands. The lesions may be miliary and punctate and remain so throughout the course of the disease with no tendency to coalesce until the entire trunk and the proximal halves of the extremities are completely covered. Circination, with the formation of small papules, has been reported.

The treatment of this mycosis consists in thorough removal of the scales by scrubbing with tincture of green soap followed by the application of 1 per cent solution of iodine crystals in alcohol or a 4 per cent solution of salicylic acid in alcohol or a 1 per cent chrysarobin ointment plus disinfection of the undergarments (underwear and nightclothes). Weeks of treatment are necessary, as the disease shows a definite tendency to relapse.

Erythrasma.—This condition, which is due to Microsporum minutissimum, differs little in its tropical form from the type seen in temperate climes. The eruption is more inclined to involve several areas at one time, that is, the axillary regions, the mamillary and rectal folds, the region of the umbilicus and the web portions of the toes as well as the inguinal folds and internal surfaces of the thighs. As the result of chronicity and

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the accompanying itching and scratching, the skin of the plaques may be thickened and lichenified and may be mistaken for neurodermatitis or the ordinary tinea cruris. The vesicles and pustules are not fungous in nature and are due to infection with cocci resulting from scratching.

The treatment of uncomplicated cases is the same as for any of the superficial mycoses. If eczematization and pustulation have taken place, these must be treated before the parasite is attacked. Disinfection of the clothing is important but is often neglected and accounts for many of the relapses.

Trichophyton Infections of the Glabrous Skin.—These eruptions, seen in the tropics, are usually due to the favoid type such as Tinea alba, which produces generalized eruptions of small, dry, scaly lesions, or to the small spored (microid) type, such as Trichophyton asteroides, which produces large solitary, deep, pustular lesions (kerion) or acute pustular eruptions on the fingers and dorsum of the hands. This parasite, or some of its variants, such as Trichophyton granulosum, may produce virulent forms of sycosis barbae. All these parasites are of animal origin, belonging to the horse, dog or cat. Trichophyton rosaceum and Trichophytum violaceum are especially prevelant in the Far East and cause a type of dry, scaly and to a less extent pustular form of sycosis barbae very difficult to cure. Occasionally any of these parasites may be isolated from the usual eruption of tinea cruris, which is thought to be due to the epidermophytons as a rule.

After a year's experience with men returning from the tropics with ringworm infection of the skin, I have come to the conclusion that the large majority of the cases consist of the usual run seen in the United States but in a more exaggerated form. Three types of ringworm predominate. The commonist type is acromycosis (McCarthy [10]), often described as epidermophytosis, of the feet and hands. The eruption is extensive, covering the dorsum and sides of the feet and hands as well as the soles, palms and lateral surfaces of the digits. It is practically always pustular in character with strong tendencies to develop secondary lymphangitis and regional glandular enlargement. The eruption is very resistant to treatment and shows tendencies to recur when the patient returns to active duty. The following parasites have been cultured from this type: Trichophyton purpureum and its two variants, Trichophyton plurizoniforme and Trichophyton lanorosum, Epidermophyton inguinale, Trichophyton interdigitale and occasionally Trichophyton aesteroides.

As a complication to acromycosis I have noted that there was also a ringworm infection of the superficial pustular type on the lower two thirds of the legs in many instances. These lesions often become secondarily infected and result in multiple ulcers varying in size from that of a split pea to that of a hazel nut. Sulfonamide ointments have no effect on these ulcers. After weeks they heal with the use of wet compresses of 1 to 8,000 potassium permanganate solution and 25 per cent cod liver oil ointment. Although the interdigitale parasite was found in a large number of these lesions, no secondary invaders could be demonstrated. Compresses with gramicidin solution were of no benefit and seemed to cause irritation in our cases. In many of the cases with superficial ulcers, healing did not take place, even after all signs of infection had disappeared, until the congestion of the skin was overcome. A piece of sponge rubber large enough to extend 1 inch in all directions beyond the margins of the ulcer was applied over the potassium permanganate compresses. The entire lower part of the leg, beginning over the dorsum of the foot, was then wrapped with an Ace bandage, which was left on for eight hours each day. At night the cod liver oil ointment was applied. The value of this combined method of treatment cannot be too strongly emphasized.

The second type, or tinea cruris (eczema marginatum) presented the same morphologic characteristics as we are accustomed to see at home, but the lesions were more extensive and more inflammatory as a general rule. The eruptions responded nicely to treatment but tended to relapse once the patient perspired or returned to duty. It was necessary to continue treatment for two months after all clinical signs of the disease had disappeared. Trichophyton purpureum and Epidermophyton inguinale were the only parasites cultured. Cultures were obtained in about one third of the cases of this type.

The third type was extensive tinea corporis, covering the trunk, front and back and the proximal third of the upper arms. The eruption consisted of complete or incomplete annular lesions separated by small areas of normal skin. They were only slightly inflammatory and were covered with very fine branlike scales but showed no vesicles or pustules. Itching was intense. The clinical picture did not suggest a tinea imbricata, and only Trichophytum rubrum or its two variants, Trichophyton lanoroseum and Trichophyton plurizoniforme, were found in the scales in about one third of the cases. This type of eruption responded nicely to an ointment containing 3 per cent iodine and 3 per cent glycerin in petrolatum. A 5 per cent ammoniated mercury ointment or a 3 per cent chrysarobin ointment produced so much irritation that it was necessary to stop them entirely. Whitfield's ointment, unless used in full strength, was not effective and was too irritating when applied to extensive body surfaces.

Tropical Epidermomycoses.—In the stricter sense of the word "tropical," this term has been used to describe a group of fungous diseases that are found only in the tropics and that involve the skin almost exclusively. They differ widely in their clinical manifestations, their etiologic agents and their geographic distribution. So far I have had no personal experiences with these rarer types of fungous diseases. Langeron [11] has divided them into four groups according to the type of parasite that causes them:

1. Endodermophytoses, which are produced by a group of endodermophytons (trichophytons) with faviforme cultures, which attack only the skin and never the hair or deeper structures to form kerion or granulomatous lesions. Nor do they invade the blood stream. In this group are found tinea imbricata, chimbera and tinea intersecta.

2. The cladosporian dermatoses (hormodendron and cladosporium). Two types are recognized: (1) the achromatic type (parasitic achromia of Jeanselme; (2) the hyperchromic types (tinea nigra and keratomycosis nigricans palmaris).

10. McCarthy, Lee: Histopathology of Skin Diseases, St. Louis, C. V. Mosby Company, 1931, p. 472.

11. Langeron, M.: Nouvelle pratique dermatologique, Paris, Masson & Cie, 1936, vol. 2, p. 335.

3. The dermatoses caused by parasites that produce aleurospores (tinea albigena, khi-hueri). This type may produce mycetoma as well as involve the skin.

4. Two dermatoses probably due to trichophyta but insufficiently studied (tropical ringworm of Sabouraud and tinea nigrocircinata).

Tinea Imbricata (Tokelau).—This is a very pruriginous tropical skin disease that is characterized by the appearance of concentric circles or rings formed of scales which are attached on their periphery and are free at the center. The circles may assume a definite rosette-like pattern designated as cocards. At times the scales may be layered like the shingles on a roof. The fungus advances peripherally, leaving a smooth surface within the circle. A similar process again develops in the original central spot and forms a circle of scales within the older, or more peripheral, circle. The process is repeated until several rings of scales are formed, each originating from the central focus, the way concentric ripples form on water from the fall of a pebble, according to Stitt.[12] The circles are from one-eighth to one-half inch apart, and the eruption may spread to involve the entire body with the exception of the axillae, groin, palms and soles. The nails have practically never been invaded.

The disease is due to a special type of fungus called Endodermophyton concentricum because it proliferates only within the skin, never penetrating deeper into the tissues and never attacking the hair. There is an entire absence of inflammation, which separates it from all other types of tropical ringworm. Endodermophyton indicum has also been cultured from the scales. This parasite produces a reddish culture, while Endodermophyton concentricum (Endodermophyton tropicale) produces a grayish white culture. Recent researches on Epidermophyton purpureum (Trichophyton rubrum) have shown that production of pigment is most variable on different batches of the same medium and is really only a secondary characteristic. Most authorities feel that the two parasites are identical. McCarthy[13] was able to prove by inoculation of guinea pigs that Trichophyton rubrum was really an endodermophyton, as it never attacked the hair or the deeper structures. Two other species reported in this mycosis, Endodermophyton tropicale and Endodermophyton mansoni, are now recognized as being identical with Endodermophyton concentricum. Langeron[14] believes that Trichophyton concentricum is the proper designation of the one and only fungus that causes this disease.

Although parasitic mycelia were first demonstrated in the scales in 1879 by Manson[15] in China, the disease had been recognized clinically as early as 1686 in the Tokelau Islands. It is now widespread in all hot and humid parts of the islands of the South Pacific, the Malay Archipelago, southern China, southern India, Ceylon, Colombia, Brazil and Guatemala. No authentic case has been reported as originating in the United States. The disease is refractory to treatment. Manson[15] recommended an iodine liniment containing 12.5 per cent iodine, as he found that the 7 per cent tincture was not strong enough to be effective. Two to 5 per cent chrysarobin ointment has been used by many authors. Castellani[16] prefers 60 to 120 grains (4 to 8 Gm.) of resorcinol in 1 ounce (30 cc.) of tincture of benzoin. These preparations will not be effective until the scales have been removed by thoroughly scrubbing the skin with hot water and tincture of green soap or sand soap. Sterilization of the clothing is most important; boiling or destroying them by burning is an absolute necessity.

Chimbera.—This is the name given to a fungous disease of the skin which is found in Brazil and which has often been confused with tinea imbricata or pinta. It was first reported by Fonseca[17] in 1924, who isolated and cultured a parasite from the scales and called it Trichophyton roquettei.

The lesions consist of large, achromatic, annular or circinate, very pruriginous patches that are covered with a thick layer of scales. Even the scales have a translucent or whitish color. The scales are thickest on the edges of the patch and are easily detached. Practically any part of the body surface, with the exception of the hair and nails, may be involved.

This type differs from the usual ringworm of the glabrous skin by its constant and pronounced depigmentation, the absence of erythema and vesicles, and the fact that the scales are much thicker on the borders than in the center of the lesions.

Tinea Intersecta.—This type of fungous disease is characterized by the appearance on the skin of papules which dry out and split across the top. It is widespread through Ceylon and southern India and southern China. Mycelial threads are easily demonstrated in potassium preparations of the scales, which produce a reddish faviforme culture on Sabouraud's medium. The parasite is called Endodermophyton castellani and has been transmitted from man to man but not to laboratory animals.

The disease begins as tiny, slightly elevated, deeply pigmented papules separated from one another by a narrow zone of normal skin. They enlarge very slowly, become very hard, dry out and crack transversely. They may remain solitary or coalesce to form irregularly sized and shaped plaques. The splits in the papules deepen until the lower layers of skin are involved. In this fashion large, thick, brownish scales are desquamated, leaving behind round or oval areas of whitish, depigmented skin similar to the desquamated areas seen in tinea imbricata. Rosette-like patterns never develop in this disease. Itching is intense over the involved areas, which may include especially the arms, legs, chest and back. No visceral or systemic involvement has been reported.

The disease is evidently benign, for it is easily cured with tincture of iodine, full or half strength, a 5 per cent ammoniated mercury ointment or a 3 per cent chrysarobin ointment.

Cladosporian Dermatomycoses (parasitic achromia of Jeanselme, tinea flava, hodi-potsy).—Although Castellani[18] classified this eruption as an atypical type of pityriasis versicolor involving only the face and neck that was due to one of the Malassezia, which he called

12. Stitt: Diagnosis and Treatment of Tropical Diseases, p. 1172.
13. McCarthy, Lee: Contribution à l'étude des epidermomycoses avec presentation des six parasites nouveaux, Ann. de dermat. et syph. 6: 19, 1925.
14. Langeron: Nouvelle pratique dermatologique, p. 339.
15. Manson, Patrick: China Imp. Customs M. Rep. 16: 41, 1879.
16. Castellani, Aldo: Tinea Imbricata, Brit. J. Dermat. 25: 377, 1913.
17. da Fonseca, O.: Sobre a etiologia do Chimbéré dermatose endemica do indios do rio São Miguel, Sc. med. 11: 615, 1924.
18. Castellani, Aldo: Tropical Forms of Pityriasis, Brit. M. J. 2: 1271, 1905.

Malassezia tropica, the work of Jeanselme,[19] and more recently that of Fontoynont and Carougeau [20] have shown that this is a disease entity per se and is caused by a conidiospored hyphomycete of the genus Hormodendron (Cladosporiae). According to Langeron,[21] this parasite should be called Hormodendron fontoynonti. Parasitic achromia is widely distributed and extremely common in all tropical countries. In Asia it has been found in the Indies, Ceylon, Malay Peninsula and Indo-China; also in Africa, Madagascar and Nigeria. So far, in South America it has been reported only from Brazil. This disease penetrates deeply into continents rather than remaining an insular coastwise disease, as is tinea imbricata.

The disease is characterized by the production, only on the glabrous skin of the face and neck, of scaly whitish plaques. The plaques, at first separated by areas of normally pigmented, healthy skin, gradually enlarge until large areas are involved. The eruption stops abruptly when the bearded or hairy portions of the face are reached. The lesions do not itch, and no papules or vesicles have ever been reported. The edges of the patches are not elevated, and no signs of inflammation are seen. The disease is very contagious, runs in families, and has periods of seasonal exacerbations. It almost dies out in the wintertime, only to flare up in the hot, moist summertime.

The parasite appears as elongated straight or short curved mycelia, with single spores or spores in chains, when seen in potassium preparations. The culture begins as a white downy colony, which later becomes a deep greenish black.

The disease should not be confused with tinea versicolor, vitiligo, syphilitic leukoderma, macular leprosy or seborrheic dermatitis.

After removal of the scales by scrubbing with sand soap and water, the disease responds nicely to the usual antiparasitics mentioned in the previous paragraphs.

Tinea Nigra (sometimes called pityriasis nigra).—This is the second member of the group of mycotic skin diseases due to a member of the family of the Cladosporia. It has been reported in southern China, Ceylon, Burma and the southern part of India and is fairly widespread and commonly seen in all these regions. The eruption is characterized by the gradual development of dull black, slightly elevated and slightly scaly, nonpruriginous, various sized spots on any part of the body except the face.

Potassium preparations of the scales show pigmented elongated mycelial threads and oval or round spores. On the usual mediums a blackish faviforme culture, which grows slowly into the depth of the medium, is produced in about six weeks. The parasite is called Cladosporium mansoni. The disease responds readily to the usual antimycotic applications.

Keratosis Nigricans Palmaris.—The third member of this group is keratosis nigricans palmaris, which has been reported only from several different points in Brazil. It is characterized by pinhead size, deep brown or black papules on the palms, the wrists, the palmar and lateral surfaces of the fingers and the interdigital spaces of the hands. The papules gradually coalesce to form slightly raised plaques of irregular contour and with polycyclic borders. There is no itching, erythema or signs of inflammation. It is due to Cladoporium wernecki, which shows branched mycelia and oval spores in potassium preparations of the scales and grows easily on the usual mediums as a brown or deep green moist colony. The disease has been reproduced in the guinea pig and in man from these cultures (Sartory, Rietman and Meyer [22]). The disease responds easily to treatment.

DERMATOMYCOSES CAUSED BY THE ALEURIOSPORE GROUP

The only member of the group well enough studied to be mentioned here is tinea albigena, otherwise known as khi-huen. The disease has been known scientifically since the later years of the last century and is widespread in southern Asia. It has been reported from southern India, Indo-China, Ceylon, New Guinea, Borneo, Sumatra, Java and Brazil.

The eruption is localized almost exclusively on the palms and soles. Three stages have been described by Nieuwenhuis:[23] the vesicular, the chronic and that of depigmentation and atrophy. It begins as an itchy papule which is quickly transformed into a vesicle surrounded by a narrow zone of intensely acute inflammatory reaction. Repeated attacks of new blisters occur until large areas of the palms and soles are involved. The disease is undoubtedly spread by scratching, which tears off the top of the vesicle and disseminates its serous contents. Since there is a tendency to spontaneous recovery, the disease becomes chronic with the production of thick, fissured and very painful calluses at the site of the vesicle. The disease may be so extensive on the soles that certain individuals, and especially Europeans, are unable to walk or work. In the chronic stage, although itching is present, it is not nearly so severe as in the vesicular, or acute, stage. Gradually the disease penetrates deeper into the skin, until the pigment function is completely destroyed. Permanent and complete depigmentation of these areas is the result. Langeron [24] mentions a fourth stage in which the eruption, after many years of chronicity, may spread to the wrists, forearms, backs of the hands and feet, and the ankles. The nails may also be involved.

The eruption is symmetrical and is due to a simultaneous contagion, rather than a trophic disturbance, as was originally thought.

The parasite is a hyphomycete with aleuriospores and belongs to the genus Glenospora. It is called Glenospora albiciscans and it grows very slowly on Sabouraud's medium as a rough surfaced colony, which has a white color at first and later a lighter brown.

The disease should be thought of because of its localization to the palms and soles. It shouldn't be confused with acromycosis, herpes circinata, tokelau, pinta, pityriasis versicolor, keratosis palmaris et plantaris hereditaria, arsenical keratoses or tylotic eczema. The different stages of the production of the fully developed disease, plus the permanent depigmentation and the laboratory studies, should make the diagnosis easy if the disease is kept in mind.

19. Jeanselme, E.: Cours de dermatologie exotique, Paris, Masson & Cie, 1904, p. 239.
20. Fontoynont, M., and Carougeau, L.: Etude sur le bodi-potsy, Bull. Soc. path. exot. **15**: 424, 1922.
21. Langeron, M.: Nouvelle pratique dermatologique, p. 359.
22. Sartory, A.; Rietman, B., and Meyer, J.: Contribution à l'étude d'une epidermomycose brésilienne palmaire noire, Compt. rend. Soc. de biol. **104**: 878 (July 4) 1930.
23. Nieuwenhuis, A. W.: Tinea albigena und die Zuchtung ihres Pilzes, Arch. f. Dermat. u. Syph. **89**: 1, 1908.
24. Langeron: Nouvelle pratique dermatologique, p. 369.

Nieuwenhuis [25] recommends that the treatment be begun early and be carried out vigorously and continuously in order to cure it before the chronic stage is reached. He uses wet compresses, renewed at frequent intervals during the day and night for several days, of 10 per cent chrysarobin in equal parts of alcohol and ether. Tincture of iodine painted on in thick layers for fourteen days may also be used. In the chronic stage the horny masses must be removed before one applies this treatment.

TROPICAL DERMATOMYCOSES PROBABLY DUE TO TRICHOPHYTONS

Tropical Ringworm of Sabouraud.—This is the name given by Castellani to a skin disease found by Sabouraud [26] in patients coming back to France from Indo-China, Tonkin and Japan. Castellani [26] reported the same eruption in Ceylon and now the disease is believed to be widespread in the hot, humid portions of the Far East.

The eruption is intensely pruriginous and very chronic. It begins on the uncovered parts of the body and especially on the legs with the formation of erythematous round spots whose surfaces are covered with a very fine layer of scales. The spots enlarge peripherally, clear in the center and form complete or incomplete rings, resulting finally in large plaques with polycyclic borders. The centers of the plaques are brownish and smooth. The scaly borders may be slightly elevated or they may merge into the surrounding normal skin. At times vesicles and papules form on the borders of the lesions. Itching increases with the spread of the disease, and in long standing cases the borders of the plaques become distinctly lichenified.

Curved, banana shaped, mycelial filaments without the double contoured membranes seen in true trichophytons are found in large numbers in potassium preparations of the scales. Between the mycelia occur oval or round spores of various sizes. The parasite has never been cultured and never transmitted from man to man or to laboratory animals.

It is almost mandatory that patients afflicted with this disease leave hot, moist climates before the disease will respond to treatment. The usual antimycotic preparations will then suffice.

Although not definitely proved, it is probable that this is a true dermatomycosis.

The second member of this group, tinea nigrocircinata, was described by Castellani [27] in Ceylon. It is characterized by the formation, only on the neck or scrotum, of black annular lesions with elevated and often crusty borders. The lesions are all about the size of a large pea. The skin surrounding the lesions is pigmented a deep brown for a distance of 1 to 2 centimeters. Potassium preparations of the scales show mycelial elements and round spores both with double contoured membranes. No cultures or inoculations succeeded.

The disease is benign and may disappear spontaneously or after the application of mild forms of iodine, chrysarobin, ammoniated mercury or other medicaments.

The mycetomas, which are so prevalent in the tropics, will be discussed in another portion of this symposium.

25. Jeanselme: Cours de dermatologie exotique, p. 236.
26. Castellani, quoted by Langeron, p. 374.
27. Castellani, quoted by Langeron, p. 375.

MEDICAL ENTOMOLOGY IN RELATION TO TROPICAL DERMATOSES

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LOS ANGELES

Diseases due to animal organisms, especially the arthropods, vary somewhat in geographic distribution and with climatic conditions, yet most of such dermatoses which commonly occur in the United States are also encountered in all other parts of the world and knowledge of the disorders seen at home will aid in the management of such dermatoses in the tropics. Consequently a brief outline of the important diagnostic and therapeutic points relating to these diseases appears indicated, particularly since most of the information derived from experience with arthropod borne disease in this war is in the hands of the military personnel and little of it has been published. Some recent data, published mainly by British investigators, and information obtained from the Army Medical Museum in Washington, D. C., and from private sources are incorporated in this article.

Of diseases caused by arthropods the following deserve attention:

DISEASES BORNE BY MEMBERS OF THE CLASS ARACHNIDA

DISEASES CAUSED BY MITES AND TICKS

Scabies.—Human Scabies: Routine knowledge of this important and ubiquitous disease will be taken for granted. Only some less generally known points which may be of service will be covered.

Infestation is occasioned by more or less intimate contact with an infested person. Sleeping with a person with the disease or in a bed recently occupied by such a person is the most common method of contracting the disease, but in a considerable proportion of cases the infestation is of venereal origin. However, so transitory a contact as a simple handshaking may suffice to transmit the disease. Scabies is so highly transmissible that it has been an important source of loss of man-days in all armies in all wars. Scabies should be considered in every case of pruritic eruption, especially if the hands and the genitalia are involved. Once the diagnosis is made, men who have been in daily contact with the patient should be examined.

To recover Sarcoptes scabiei from a lesion needs an experienced examiner. Under field conditions the presence of burrows or papulovesicles in their characteristic location and the history of nocturnal pruritus should suffice to make the diagnosis of scabies. The penile and scrotal lesions commonly are infiltrated papules, and the diagnosing of scabietic papules as lesions of early syphilis, and vice versa, is a deplorable and unfortunately not uncommon error. On the other hand, since scabies is frequently venereal in origin the simultaneous presence of the two diseases is not improbable.

Latest research in the treatment of soldiers [1] has shown that of the many medicaments in common use for scabies only two, sulfur ointment and benzyl ben-

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1. Mellanby, Kenneth; Johnson, C. C., and Barkley, W. C.: The Treatment of Scabies, Brit. M. J. 2:1 (July 4) 1942.

zoate, are satisfactory. Benzyl benzoate, the main ingredient in Peruvian balsam, was found to be fully effective in the form of a lotion or emulsion. A 10 per cent sulfur ointment or a vanishing cream containing 10 per cent of sulfur applied three times in routine fashion is efficacious, while sulfur lather preparations are not. Tests with preparations containing rotenone have been unsatisfactory; furthermore, derris root emulsions are notorious for causing dermatitis. Investigations suggest that pyrethrum extracts are not particularly valuable for treating human scabies, and pyrethrum too is well known as an epidermal sensitizing agent.

The case of ointment versus liquid preparations may be stated thus: If the patient applies the medicament himself, the use of ointments, even though they are "messy," is safer, for it has been found [1] almost impossible for a patient to apply either liquid preparations or creams satisfactorily to himself.

The classic method of treating scabies made mandatory a thorough scrubbing of the skin under a hot shower with liquid soap and a flesh brush, to remove the tops of all lesions. While the long soak in a hot bath followed by scrubbing is a desirable feature if soldiers are treated in a hospital or sick bay, it is useful to know that treatment can be carried out successfully when such facilities are not available,[1] a point of great practical importance in desert warfare.

Prescriptions 1, 2 and 3 are recommended for routine use. I have used the ointment given in prescription 1 for years with satisfactory results.[2] As an after-treatment the application of a simple antipruritic shake lotion is desirable. The formula [3] given in prescription 4 is helpful. Under no circumstances should the course of treatment be repeated unless the presence of a living organism is demonstrated, since the dermatitis resulting from overtreatment (especially with sulfur) may occasion a greater loss of man-days than the infestation.

The most frequent complication of scabies is pyogenic infection, especially under field conditions; it tends to

PRESCRIPTION 1.—*Sulfur-Peruvian Balsam Ointment*

		Gm. or Cc.
℞	Precipitated sulfur	12.0
	Peruvian balsam	12.0
	Petrolatum	
	Hydrous wool fat	aa q. s. ad 120.0

PRESCRIPTION 2.—*Benzyl Benzoate Lotion*

℞	Soft soap	
	Isopropyl (or ethyl) alcohol	
	Benzyl benzoate	aa q. s. ad 120 cc.

be more severe in seborrheic individuals and is best treated with a 5 per cent sulfadiazine or sulfathiazole cream.

Scabies of Animals: Organisms related to the acarus responsible for human scabies cause a similar disease in animals and birds which may be contracted by man.

Scabies of the horse. This disorder is of common occurrence in military stables. Soldiers caring for horses with scabies frequently contract the disease, which has a short incubation period; signs often appear on the day infestation occurs. Differentiation from human scabies rests on the absence of burrows and the differences in location and appearance of the lesions. The lesions, which are bright red, conical, follicular papules, usually capped by a hemorrhagic crust, appear on the flexor surfaces of the arms, the breast and the

PRESCRIPTION 3.—*Benzyl Benzoate Emulsion*

		Gm. or Cc.
℞	Benzyl benzoate	200.0
	Stearic acid	20.0
	Triethanolamine	5.0
	Water q. s. ad	1,000.0

Melt the stearic acid with the benzyl benzoate on a water bath. Mix the triethanolamine with half the quantity required of warm water and pour into the stearic acid-benzyl benzoate mixture cooled to about 30 C., shake to form an emulsion and add enough water to produce the required volume.

PRESCRIPTION 4.—*Antipruritic Shake Lotion*

		Gm. or Cc.
℞	Menthol	
	Phenol aa	0.5
	Zinc oxide	
	Talc aa	20.0
	Glycerin	15.0
	Water	70.0

abdomen down to the belt line; the genitalia are almost never involved. A peculiar feature is the appearance of an urticarial wheal when the lesions are scratched (factitial urticaria). The disorder runs a mild course and subsides spontaneously. Ordinary antiscabietic treatment may be used if necessary.

Scabies of the dog. This disease is frequently encountered in tropical and subtropical countries. In human beings it is characterized by the appearance of red macules and papules, occasionally capped by minute vesicles; urticarial reactions are common. The location of the eruption depends on the point of contact; the neck and the upper part of the chest are most frequently involved, but the cheeks, postauricular region and scalp are also common sites. The disorder responds promptly to antiscabietic therapy.

Scabies of the cat. This disease, most common in countries in which neglected cats abound, is caused by a smaller parasite which is not strictly an acarus. On human patients the lesions, which are similar to those of strophulus, appear as small papules capped by a minute vesicle. Antiscabietic treatment is not required; the application of an antipruritic shake lotion is usually sufficient.

Rat Mite Dermatitis.—The disease is caused by Lyponyssus bacoti, which is of significance because it is a carrier for the virus of endemic typhus fever. The lesions consist of wheals, papules and vesicles, which may become infected as a result of scratching. In adults the eruption is usually limited to the ankles, but it may appear in small patches elsewhere. Buildings infested with the mites must be gone over by an exterminator squad.

Food Mite Dermatitis.—Other mites, closely related to acari and predominantly of the Tyroglyphus variety, are present in such materials as cheese, meal, copra, dried fruit and linseed oil. Persons, such as packers

2. Becker, S. W., and Obermayer, M. E.: Modern Dermatology and Syphilology, Philadelphia, J. B. Lippincott Company, 1940.
3. Pillsbury, D. M.; Sulzberger, M. B., and Livingood, C. S.: Manual of Dermatology, Philadelphia, W. B. Saunders Company, 1942.

or dock workers, who come in contact with infested material may show a pruritic eruption which is known variously as "grocers' itch" or "copra itch." The lesions, small, pointed erythematous papules which itch intensely, develop on the parts of the body which come in contact with the material; the extensor surfaces of the hands and forearms are chiefly involved. The application of an antipruritic shake lotion is therapeutically sufficient.

Acarodermatitis Urticarioides.—Grain itch is caused by a macroscopic, grayish yellow mite, Pediculoides ventricosus, which lives on the larvae, caterpillars and chrysalis of various organisms noxious to grain; the eruption occurs among men who sleep on infested straw or straw mattresses. The extent of the eruption depends on the number of organisms and the sensitivity of the patient. In mild infestations it is limited to the regions in most intimate contact with the infested material; in the more severe forms of the disease the entire trunk, the neck and even the face may be involved. The lesions are small bright red papules often capped by a vesicle which becomes a pustule. The larger lesions are somewhat urticarial. All the papules may appear hemorrhagic, but they pale out completely on glass pressure. Diagnosis is sometimes difficult because the eruption may resemble varicella, and it may be accompanied by such mild constitutional symptoms as fever and slight albuminuria. However, the characteristic umbilication of the varicella vesicles is absent and the pruritus is intense. The history of contact with straw is suggestive, especially if the troops have been billeted about farms. Treatment consists in application of an antipruritic shake lotion. Infested straw ticks should be burned.

Wood Tick "Bites."—Ticks (Ixodes) are readily visible organisms which penetrate the epidermis by means of a lancet shaped under lip until the head is more or less embedded in the skin. The penetration of the tick is usually unnoticed by the patient; a circle of erythematous reaction appears only if the patient is hypersensitive. Ticks are parasites of cattle, dogs, rabbits and man. In temperate climates there is a seasonal prevalence in May, June and July. Men should be examined carefully for ticks because of the role of the parasites in spreading Rocky Mountain spotted fever, tularemia and exanthematous fever of the Mediterranean, São Paulo typhus and Central African relapsing fever. Soldiers should be instructed not to remove ticks with the bare fingers, for if an attempt is made to remove the organism by force the lower jaw is left in the wound and may cause a prolonged purulent discharge unless removed surgically. It is better to suffocate the tick by the application of a material such as liquid petrolatum, glycerin or kerosene. With such treatment the head is spontaneously retracted in several minutes or hours and the tick falls off.

Trombidiosis.—Jigger bites (trombidiosis) are produced by larvae (Leptus autumnalis, harvest mites, redbugs) of several members of the Trombidia family which live on flowers, grasses, shrubs and grain (buckwheat) and on the ground near such vegetation. The larvae live independently and feed on various animals (mice, snakes and man). The organisms, which are active from spring to fall, produce lesions at the point of contact; they commonly attack the skin below a tight constriction, such as a garter or a belt. The initial erythematous macule is followed by an intensely pruritic papule surrounded by an erythematous halo, which may be hemorrhagic; the larva may sometimes be seen in the center of the papule as a point of brick red color. The lesions may be of other types, e. g. minute hemorrhagic puncta, urticarial wheals or lesions resembling lichen urticatus. The bite itself is usually not noticed; the patient's attention is aroused by the intense itching, which is especially evident at night when the patient has become warm in bed. The larva falls off in forty-eight hours or less and is consequently gone when the patient seeks medical attention. The lesions persist for an uncommonly long time. The secondary infection which usually ensues is often extremely persistent, and the response to treatment is less satisfactory than with other forms of secondary pyogenic infections. Occasionally there is initiated a chain of generalized skin sensitization with eczematous "id" lesions which require weeks or months to heal.

Trombidiosis is of military importance because partial disabilities from scratch infection may assume large proportions among troops in warm climates. In addition, in the Far East trombiculae present another and more serious danger, for the organisms transmit the Tsutsugamushi group of Rickettsial diseases, namely the Japanese River fevers, which are identical with Malayan scrub typhus.

PRESCRIPTION 5.—*Compound for Trombidiosis*

		Gm. or Cc.
℞	Benzocaine	2.0
	Flexible collodion	15.0
	(Bottle with rod in stopper.)	

Vigorous measures for the prevention of jigger bites should be taken in regions where there is thick, tall grass, especially during the late summer months. Prophylaxis consists in the application of 5 per cent sulfur in talcum as a dusting powder. A warning about the possibility of sulfur dermatitis should be given especially in the case of men with dry or poorly pigmented skins.

Thrice daily applications of a 2 per cent rotenone solution (such a preparation is available from the Abbott Laboratories) have been used for treatment; this therapy has the disadvantage that dermatitis frequently ensues, especially when the solution is applied to the genitalia. Application of an antipruritic shake lotion will allay the itching. Twice daily application of the preparation given in prescription 5, recommended by R. L. Sutton Jr., has proved effective.

It is essential to recognize secondary pyogenic infections early and to treat them by local applications of a 5 per cent sulfathiazole or sulfadiazine ointment. It is also important to protect the sites of the lesions from contact with rough woollen clothing, so that development of contact dermatitis may be prevented; once this complication has developed the man should be sent to a hospital, because field conditions do not allow the limitation of activity necessary to overcome the cutaneous irritation.

SPIDER "BITES"

The most important poisonous spider—and the only one found in the United States—is the female of Latrodectus mactans, known as the black widow. The spider is commonly found on refuse heaps in buildings and

stables. Pain in the region of the bite and intense regional swelling may be followed by such grave constitutional symptoms as spastic cramps of the extremities, rigidity of the abdomen with nausea and vomiting, headache, ringing in the ears, dizziness, pain throughout the body, a rise in blood pressure of 30 or 40 mm. and a state of anxiety. Generalized toxic erythemas are not uncommon. The bites may be inflicted on any part of the body but frequently occur on the genitalia or buttocks through exposure in an outdoor privy.

Treatment, according to Frawley and Ginsberg, should consist in bed rest, a soap solution enema, increase in the intake of fluids, intravenous administration of 20 cc. of a 10 per cent solution of magnesium sulfate (to combat hypertension and spasticity of the muscles), hypodermic administration of morphine (to control pain) and peroral sedation. Tincture of iodine should be applied immediately to the wound, followed by wet dressings with potassium permanganate (1:8,000).

DISEASES BORNE BY MEMBERS OF THE CLASS INSECTA

DISEASES CAUSED BY LICE AND BUGS

Insects are of much greater importance in military medicine than in civil practice. Insects spread many epidemic diseases, and their "bites" may cause disability of formidable duration if adequate measures for the prevention of secondary eczematization and pyogenic infection are not instituted immediately after the "bite" is inflicted.

In general an insect "bite" appears as a central punctum in an initial macule, wheal or papule; the degree of inflammatory reaction varies with individual hypersensitivity. Insect "bites" often appear as asymmetrical groups and it is best to consider them as a diagnostic possibility in every pruritic papular and urticarial eruption.

Pediculosis.—It appears certain that lice, the agents of pediculosis, leave a febrile patient and try to find other hosts, a point of epidemiologic importance. It is also known that small lice may be distributed in the open air by wind and may be blown on to the outer garments of those engaged in dealing with infested persons. It has been shown that head lice may be acquired from the upholstered backs of seats and chairs, from brushes and combs and by passage from hat to hat (e. g. in schools or mess rooms). Similarly, the body louse may spread when groups huddle together for warmth.

The military significance of pediculosis is illustrated by the statistics showing that during World War I (in 1917) the casualty clearing stations of the British Second Army admitted more than 10,000 men for inflammatory disorders of the skin, caused mostly by lice.

1. Pediculosis Corporis: Pediculosis corporis is the most important of the three forms of this infestation, because the body louse, its agent, transmits epidemic typhus, trench fever and recurrent febrile spirochetoses. The body louse is better called the clothing louse, since it inhabits the clothing and only feeds on the skin; its eggs are laid about the seams of clothing, where they should be searched for. In most instances the patient presents only excoriations, usually linear, on portions of the body where the clothing is in intimate contact, especially the shoulders and about the waist and buttocks. The incidence of infestation increases sharply in men who have little opportunity to bathe, especially if quarters are crowded. The spread of diseases by the clothing louse is aided by the European custom of popping lice between the thumbnails and the American and Australian habit of crushing them with the teeth. Since the spirochete of the recurrent febrile spirochetoses is transmitted by inoculation incident to rupturing of a louse and cannot be transmitted by the louse's "bite," these customs should be discouraged.

Treatment consists in autoclaving of the clothing for fifteen minutes and thorough scrubbing of infested men with soap and brush. Secondary pyogenic infection or scratch dermatitis must be treated.

2. Pediculosis Capitis: The only important complication of this otherwise harmless infestation is the secondary pyogenic infection which is produced by scratching, usually on the nape of the neck or the occipital and temporal regions, and is often accompanied by enlargement of the posterior cervical nodes.

The older methods of treatment by applications of equal parts of kerosene and olive oil, acetic tincture of

PRESCRIPTION 6.—*Compound for Pediculosis*

℞ Lauryl thiocyanate (du Pont technical grade, distilling above 236 C.)	25%
Paraffin oil (B. P. 325 C.)	75%

PRESCRIPTION 7.—*Compound for Pediculosis*

℞ Lethane 384 special (Rohm and Haas, Philadelphia)	50%
Refined paraffin	50%

larkspur, N. F. VI, or 1:500 mercury bichloride solution are gradually being replaced by other methods. I use cuprex (a proprietary copper compound) solution. Busvine and Buxton [4] reported great success from the use of a 1 per cent rotenone emulsion or the compounds given in prescriptions 6 and 7. They recommended applying the compound once, with spoon or pipet, to four areas of the scalp on each side and allowing it to remain for ten days before shampooing; 8 cc. of the material per patient is sufficient. Patients' caps and helmets, of course, must be sterilized. The use of vinegar to soften the gelatinuous coating that attaches the nits to the hair should be discouraged; contrary to popular belief, it has been shown that the substance is not dissolved after soaking in a 10 per cent acetic acid solution for several days.[4] If many men are infested, it is advisable to clip the scalp routinely.

3. Pediculosis Pubis: Infestation with the crab louse would be insignificant except for the discomfort produced by the itching were it not for the disabilities which result from irritating methods of treatment. Neither the old blue ointment nor rotenone preparations should be used, and shaving of the pubic hair, which causes considerable discomfort during the early stage of regrowth, is unnecessary. The best method of treat-

4. Buxton, P. A.: The Louse, Baltimore, Williams & Wilkins Company, 1940.

ment consists in application of 1 to 2 ounces of cuprex. The solution is rubbed into the involved regions and ten minutes later rubbed in again; it is allowed to act for one hour, and the region is then carefully washed with soap and water. Pediculi on the eyelashes may be removed by contact with an applicator saturated with cuprex for one minute. If cuprex is not available, mercury bichloride 1:500 in 70 per cent alcohol may be applied twice daily, but it should be remembered that the skin is occasionally sensitive to mercury and that eczema may result. Failures often result from not paying sufficient attention to the perianal hairs.

BEDBUG "BITES"

Cimex lectularius is of epidemiologic significance as the transmitter of the recurrent febrile spirochetoses. Hence the remarks on the danger of inoculation by rupture of lice apply to rupture of bedbugs as well.

The lesions produced by Cimex are usually firm, conical papules. However, if hypersensitivity is pronounced, large, sometimes hemorrhagic, bullae may form. The grouping of lesions in pairs and triplicates, fairly close together, is a characteristic feature.

Treatment consists in extermination of the insects. The only method which gives absolutely certain results is fumigation with hydrocyanic acid. Mercury bichloride solution 1:500 kills the eggs when poured into cracks and crevices of furniture, floors and walls, and fumigation with sulfur will kill the parasites. A good general insecticide, cheap and harmless, which may be used for spraying floors and walls, is made by dissolving three parts (by weight) of soft soap in fifteen parts of water and slowly adding kerosene while stirring constantly until no more will emulsify.[4] This concentrated emulsion can be stored in bottles; it is diluted 1:20 for use.

DISEASES CAUSED BY FLEAS

Flea "Bites."—Fleas are chiefly important intermediary hosts for the agents of such serious diseases as bubonic plague, exanthematous and murine typhus and various bacteria, tropical protozoa and worms. The flea jumps on and off the host and does not confine itself to one host. In addition to human fleas, many varieties of animal fleas attack man when hungry; those of most interest to man are the fleas of dogs, cats, rats and squirrels. Confusion arises from the frequent erroneous designation of these fleas, in sandy regions, as "sand fleas," a term which is correct only for the penetrating, strictly tropical sand flea (chigoe). Animal fleas infest buildings or even the sand itself in sandy areas and attack human beings.

A flea puncture results in the formatio. of an erythematous macule or wheal with a central hemorrhagic punctum (purpura pulicosa). Giant urticaria may result if the patient is hypersensitive. Some persons are immune.

Treatment consists in the application of an antipruritic shake lotion.

Chigoe.—Chigoe infestation, or dermatophyliasis, is a cutaneous disorder produced by the sandflea, or chigoe, which is encountered chiefly in Central America, the West Indies, the northern part of South America, Africa and India. It is principally a disease of the tropics but occasionally occurs in the temperate zone. Chigoe infestation is known under various native designations, of which nigua and chigoe itch are the most common. In the United States trombidiosis, or jigger bites, is frequently confused with dermatophyliasis, although the two disorders are caused by entirely different organisms and run different clinical courses.

The minute insect which is responsible for dermatophyliasis belongs to the family Sarcopsyllidae and is named Sarcopsylla (Pulex, Tunga, Dermatophilus) penetrans; it is the most completely parasitic of the species of fleas. In appearance it resembles Pulex irritans, the common flea, except that its proboscis is longer. Sand fleas live in dry, sandy soil and feed on the blood of various animals. After impregnation, the female attaches itself to the skin of man and that of many animals, especially swine, rats and mice, and pierces it obliquely, so that all except the last two segments of its body become embedded. Sucking blood for several days increases the size of the insect to several millimeters. If left undisturbed, it remains on the host and lays a large number of eggs, which hatch in eight days and after three weeks become mature adults.

The cutaneous lesion produced by the sand flea is at first a shallow burrow, at the opening of which the posterior part of the insect is visible as a brownish red dot. Later there develops a pruritic papule, several millimeters in diameter, which suppurates. Abscesses and ulcers, accompanied by lymphangitis, may be formed; such ulcers are resistant to treatment. Secondary infection, gangrenous or tetanic, may necessitate amputation. Lesions as a rule are located on the feet, at the corner of or beneath the free margin of the toe nails or on the ankles; however, since soldiers often sleep on the ground, sites other than the feet (e. g. the anogenital region) are often affected.

Treatment depends on the stage of the disorder. If suppuration has not yet taken place, the affected part should be thoroughly cleansed with soap and water and the insect skilfully extracted by means of a blunt, heated needle. Great care should be taken not to rupture the flea while attempting to extract it, because if part of it or some of its eggs remain in the burrow, subsequent suppuration is inevitable. If suppuration has occurred or if the attempt to remove the insect is only partially successful, the cavity should be subjected to forceful cleansing and cauterization with pure phenol, followed by the immediate application of alcohol. The wound should be dressed with a 5 per cent sulfathiazole or sulfadiazine cream.

Infestation can be prevented by putting up camps away from chigoe infested localities. The neighborhood of native villages should be avoided, and the ground should be swept or fired. Walking barefoot should be discouraged when the disorder is prevalent.

DISEASES CAUSED BY OTHER INSECTS

Other insects which attack human beings are gnats, mosquitoes, bees, wasps and flies. The resulting lesions are macular, papular, hemorrhagic or urticarial. If the patient is hypersensitive, the reaction may be so extensive as to simulate angioneurotic edema, and severe constitutional symptoms may even be present. The larva of the bot fly produces painful inflammatory nodules, and the "bite" from the black fly causes the formation of a pruritic nodule, often with the accompaniment of swelling of the regional lymph nodes and regional pain and stiffness; the reaction is often delayed for twelve to twenty-four hours and persists for days.

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YAWS, CUTANEOUS LEISHMANIASIS AND PINTA

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Of the three diseases described in this communication, yaws and cutaneous leishmaniasis are prevalent in many parts of both hemispheres. Pinta is largely confined to the American tropics. Few members of our armed forces are liable to contract either yaws or pinta, as these diseases are due to lack of personal hygiene and are not usually acquired through insect vectors. However, our medical officers in certain tropical regions will doubtless have to render medical aid to native populations and will then see many cases of these diseases.

Cutaneous leishmaniasis is, however, contracted both by personal contact and by the bite of one of several species of Phlebotomus or occasionally of other insects. It is therefore probable that some of our armed forces will be infected by this disease.

Yaws and pinta are confined almost exclusively to the tropics, whereas cutaneous leishmaniasis is seen in both tropical and semitropical regions.

YAWS

Yaws is the term used in British and American colonies for the disease known as frambesia tropica. In French speaking colonies the term pian is used. Yaws is an infectious disease caused by Treponema pertenue, an organism which is morphologically identical with the spirochete of syphilis. Its discovery by Castellani followed shortly after that of Treponema pallidum. The disease is confined almost entirely to the Negro race. The geographic distribution is widespread in parts of equatorial Africa, many islands of the Pacific including the Philippines, the Malay States, Burma and Thailand. In the western hemisphere it is extremely prevalent in Haiti, Santo Domingo and Jamaica as well as in some equatorial areas of South America.

Yaws resembles syphilis in some respects but shows enough differences for it to be regarded as a separate, though closely allied, disease. Infection with yaws is almost invariably extragenital, the initial lesion often occurring on the leg. The disease is probably acquired most often through personal contact, just as impetigo contagiosa is carried from one child to another. Ideal conditions for this method of transmission of yaws exist among native races in tropical regions, who sleep together in crowded huts and wear little or no clothing. There is no doubt that yaws may also be transmitted by flies. In Jamaica, Kumm and Turner noted swarms of hippelates flies on lesions of yaws and were able to find 300 spirochetes in the diverticulum of a single fly. It is thought that the infection is simply due to regurgitation by the flies when they alight on an abraded surface.

Yaws is acquired most often in childhood. Transmission through the placenta is, however, unknown. Yaws is never congenital and fails to show any stigmas such as saddle nose, Hutchinson's teeth or interstitial keratitis, which would correspond with those of congenital syphilis. In India, Powell observed 17 pregnant women in the florid stage of secondary yaws and found that all gave birth to babies who remained free from yaws.

Another feature which differentiates yaws from syphilis is the complete absence of lesions of the mucous membranes in the early (secondary) stage. There are no vaginal mucous patches, which accounts for the absence of venereal infection. However, in the late or tertiary stage destructive ulcerating gummas may be seen in the mucous membranes.

The cutaneous manifestations of secondary yaws show some striking differences from those of syphilis. The initial lesion, or "mother yaw," which is often absent, is of the same type as the common frambesiform eruption except for its much greater size. The typical secondary eruption appears about six weeks to three months after infection and consists of small papules, some of which disappear without further change, whereas others coalesce, soften and form rather typical amber colored crusts. This does not resemble any manifestation of syphilis but may be mistaken for impetigo. The eruption may be generalized and profuse or show a tendency to be localized about the mouth and in the anogenital region. At times the lesions form circles, which are spoken of as "ringworm yaws," though this does not resemble the annular papular syphilid with its delicate raised border and hyperpigmented center, which is so characteristic of the Negro race. The eruption lasts from one to two years or even longer at times and disappears spontaneously without leaving any permanent trace.

Whereas the macular eruption (roseola) is the commonest one in syphilis, it is nearly always absent in yaws. This is not due to the difficulty in detecting it on the dark skin, as those who have had experience with syphilis in Negroes will testify.

A peculiar eruption of yaws occurs on the soles and at times on the palms and is spoken of as "crab yaws" in the West Indies. This term is used to describe the difficulty in walking (like a crab) especially when the lesions are secondarily infected with pyogenic cocci. This manifestation consists of hyperkeratoses which are usually bilateral and which occur frequently toward the end of the secondary period. That it is an undoubted manifestation of yaws is proved by the presence of spirochetes beneath the scales and by the response to antisyphilitic treatment.

An infrequent eruption of yaws consists of pinhead size papules in groups. This has been called a "keratoid" eruption on account of its supposed similarity to keratosis pilaris. In my opinion it has a closer resemblance to lichen scrofulosorum.

Yaws again differs from syphilis by the complete absence of iritis or iridocyclitis. This is rather striking, as syphilitic iritis is decidedly more common in the Negro than in the white race. There is also an absence in yaws of alopecia either of the diffuse or so-called "moth eaten" type. The statement frequently made that itching constitutes a feature of differential diagnosis between syphilis and yaws is unwarranted, in my opinion. It is agreed by all that the cutaneous lesions of syphilis are essentially nonpruritic and I think the same is true of yaws.

The late destructive or tertiary manifestations of yaws are clinically indistinguishable from those of syphilis

This paper, in a symposium on "Tropical Diseases of the Skin," is published under the auspices of the Section on Dermatology and Syphilology.

Excellent articles on pinta have recently been published by V. Pardo-Castello and Ismael Ferrer (Arch. Dermat. & Syph. 45:843 [May] 1942) and by Herman Beerman (Am. J. M. Sc. 205:611 [April] 1943).

Full descriptions with bibliography of the three diseases described may be found in Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases, ed. 6, Philadelphia, Blakiston Company, 1943, edited by Col. Richard P. Strong. Also chapters by Howard Fox in Clinical Tropical Medicine, edited by Z. Bercovitz, New York, Paul B. Hoeber, Inc., to be published.

and consist of gummas of the skin and mucous membranes and osteoperiostitis of some of the long bones, synovitis and tenosynovitis, often producing severe mutilation in neglected cases. The tendency of secondary manifestations of syphilis to be followed by a long period of latency is not the rule in yaws, as in this disease the late changes may follow soon after or even before the secondary lesions have disappeared.

Yaws is a milder infection than syphilis, as is shown by its comparatively infrequent involvement of the central nervous and cardiovascular systems. The majority of investigators have failed to find abnormalities in the spinal fluid in yaws, and the majority also consider tabes and paresis to be nonexistent or at least extremely rare in yaws. Similar opinions are expressed about lesions of the cardiovascular system. Although Choisser found 10 cases of aneurysm in a series of over 700 necropsies in Haitian Negroes, there was no positive proof that they had not been caused by syphilis. The chief evidence was based on the fact that these lesions were found in natives who had lived in rural districts where yaws rather than syphilis was extremely prevalent. The prognosis as to life in yaws is good, Manson-Bahr stating that, "judging from the statistics collected by Nicholls, the mortality must be very small indeed."

The clinical diagnosis of yaws is usually easy in the secondary stage (frambesiform eruption), though in the late stage it becomes difficult or impossible. Spirochetes can be demonstrated with great ease in the frambesiform lesions after removal of the crusts. The organisms have also been found in the lymphatic glands, spleen and bone marrow. They have, however, never been demonstrated in the blood, though successful inoculations have been made in monkeys from the blood of persons suffering from yaws. Differences between syphilis and yaws have been noted in bones on roentgenographic examination, yaws showing a high incidence of osteoporosis.

Animal experiments with monkeys and rabbits have added to our knowledge of yaws. It has often been possible to establish the diagnosis of yaws by inoculation of monkeys, in which a typical frambesiform eruption has been produced. According to Pearce and Brown, a differential diagnosis between syphilis and yaws can usually be made by intratesticular inoculation of rabbits. Inoculation with Treponema pallidum usually produces a hard lump, with frequent dissemination to the lymphatic glands, bones and viscera. On the other hand, inoculation with Treponema pertenue produces a local reaction, spoken of as a granular orchitis.

Animal experimentations have also added to our knowledge of immunity in yaws. There is eventually complete cross immunity between syphilis and yaws, though there are differences in the immune state in the two diseases. Thus Schobl states that syphilis produces an immunity to itself quicker than it does to yaws and much quicker than yaws does to itself. Before the period of cross immunity is established it is possible for man and susceptible animals to acquire both diseases.

Serologic reactions with either complement fixation or flocculation tests are of no value in differential diagnosis, as syphilis and yaws respond similarly. Both diseases give close to 100 per cent positive reactions in the secondary stages with a gradual lessening of such reactions in the later stages.

Yaws responds unusually well to arsphenamine (or allied drugs) and to bismuth compounds, though mercury does not act satisfactorily in the secondary stage, a feature which is considered diagnostic by Castellani. In the early stages the disease may be permanently cured by three successive injections of neoarsphenamine, though much more treatment is required in the late stage. Oral administration of acetarsone has been used with success, but, as Strong says, the expense of a complete course may equal that of three injections of neoarsphenamine. Bismuth has been widely used on account of its low cost for mass treatment of native populations.

There are three unusual diseases which in many cases are considered to be sequelae of yaws. They are gangosa, goundou and juxta-articular nodes. Gangosa is a severe destructive nasopharyngitis, a typical case being usually described as presenting a funnel shaped opening with the upper lip as its lower border. The nasal septum and surrounding soft parts, the palate and even the eyes may be destroyed. It is thought to be a sequela of yaws, because it occurs in areas where yaws is endemic. Gangosa is seen in parts of equatorial Africa, in Guam, in the Fiji Islands and in the island of Dominica in the West Indies. The disease occurs in untreated persons and is practically incurable.

Goundou is an exostosis beginning in the nasal process of the superior maxillary bone, which forms a hard painless tumor, projecting downward and outward. It may attain the size of an apple and interfere with vision or destroy the eyes. The disease was first observed in Africa by McAllister, who spoke of the affected natives as "horned men." Goundou is thought by many to be a sequela of yaws because it often follows the frambesiform eruption and because heavy inoculations with Treponema pertenue fail to produce ordinary lesions of yaws. Some doubt the relationship to yaws and consider the disease to be osteitis deformans or other type of disease of the bone. The treatment is surgical.

Juxta-articular nodes consist of painless, hard enlargements occurring usually in the neighborhood of the larger joints, especially the elbows and knees. Similar lesions occur as late manifestations of syphilis. Spirochetes have been demonstrated both in the nodes supposedly due to yaws and in those due to syphilis. The course of the disease is exceedingly chronic, but it responds slowly to antisyphilitic treatment. If desired, the lesions can be surgically removed.

CUTANEOUS LEISHMANIASIS

There are two types of cutaneous leishmaniasis which differ sufficiently to warrant their being considered as separate diseases. They are oriental sore, a purely cutaneous disease of the Old World, and mucocutaneous leishmaniasis, seen only in the Western Hemisphere. These two forms of the disease which involve the skin are caused by protozoa which are morphologically similar to each other and to the organism which causes kala-azar. They are round or oval bodies with a large kinetic nucleus and a small rodlike nucleus, and in cutaneous lesions they are found chiefly in endothelial cells and large mononuclear leukocytes. They can be demonstrated microscopically in scrapings from the edge of an ulcer or the under surface of a biopsy specimen, stained by Wright's method. They can also be cultivated and are flagellated obligatory aerobes. However, in the so-called relapsing cases of oriental sore it is difficult or impossible to demonstrate the organisms.

1. *Oriental Sore.*—Known also as Aleppo boil, Biskra button and Delhi sore, oriental sore is confined to the Eastern Hemisphere and has a wide geographic distribution. It is endemic on the Mediterranean coast of Africa and in Syria, Palestine, Armenia and the southern and eastern parts of Asia, including Iraq, Iran and parts of India and China. In Europe it occurs chiefly in Greece, Italy, Sicily, Cyprus and Crete.

The disease is transmitted both by the bite of several species of phlebotomus and at times by the common house and stable fly and also by personal contact. Both of these methods of transmission have been repeatedly proved. Dogs, especially those with lesions about the nose, may act as reservoirs of the parasites.

The incubation period varies from weeks to months or even a year or more at times. The disease begins as a tiny papule, which enlarges to form a plaque of 2 or 3 or even 6 or 8 centimeters in diameter. The lesions usually soften and discharge a sticky material which dries and forms crusts, beneath which is an ulceration with a pink, edematous areola. At times the lesions do not break down and ulcerate. Eventually the crusts fall and are apt to be followed by scars which may be rather deforming. The lesions are situated often on the uncovered parts (face and extremities), rarely on the trunk, and never on the palms, soles or hairy scalp. They may be single or multiple. In rare cases there may be 100 or more lesions. The name Aleppo boil is a misnomer, as the disease has no resemblance to a furuncle.

The course of the disease is self limited and usually disappears within a year, as the Turkish name habelsench, or "button of one year," would indicate. The disease causes no constitutional and only slight subjective symptoms. It leaves no sequelae except scars and is usually followed by permanent immunity. Occasionally the disease lasts for years, and it may recur. In both chronic and recurring types a tuberculoid structure is found on microscopic examination. The histologic structure of the ordinary type is that of a granuloma without any characteristic features.

A positive diagnosis can be made with certainty only by finding the causative organisms in smear preparations or by culture. In cases such as the relapsing (tuberculoid) type it is usually impossible to demonstrate the organisms either by direct microscopic examination or by culture. Here intracutaneous tests by cultures of killed organisms may be of great assistance. Such tests are positive in a large proportion of cases. The clinical diagnosis may be difficult in endemic regions, but other diseases must be considered, including ecthyma, syphilis, tuberculosis, blastomycosis and tropical and other ulcers. A feature which aids in differentiating blastomycosis is the failure of the latter disease to respond to treatment by antimony and potassium tartrate.

In the treatment of oriental sore, innumerable remedies have been tried. When the lesions are extremely numerous it is advisable to use intravenous injections of antimony and potassium tartrate. For the ordinary case with one or two lesions, freezing with solid carbon dioxide is recommended. X-ray therapy gives good results, but this entails expensive apparatus as well as skill in its use. The so-called grenz rays have recently been used in Palestine with success in the treatment of the relapsing type, which has hitherto been resistant to all therapy. Prophylactic treatment consists in personal hygiene and proper care of abrasions. To afford protection against the bites of the sandflies it is advisable to sleep under a net containing forty-five holes to the square inch and to use insect repellents by day. In endemic areas, infected persons should be treated and lesions should be covered by protective dressings.

AMERICAN LEISHMANIASIS

The mucocutaneous type (American leishmaniasis) is found in the Yucatan peninsula, in parts of Central America, especially Guatemala, and in every country of South America except Chile. The greatest number of cases is found in Brazil, followed in frequency by Peru, Bolivia and Paraguay.

The disease is seen chiefly in men as the result of their occupation as foresters, workers on tea plantations or collectors of chicle for chewing gum. American leishmaniasis occurs in moist tropical regions with luxuriant vegetation. One type of the disease, however, occurs on the slopes of the Andes at altitudes varying from 3,000 to 8,000 feet.

American leishmaniasis has more than the usual number of local names, no less than twenty-three different designations being given it in South America. In Peru alone there are six local names, one of which, "espundia," has been improperly used in textbooks for a disease that occurs in all the Americas. No one ever employs this local name in Brazil, where the greatest incidence of the disease is found.

The most striking clinical difference from oriental sore is the presence of lesions of the nose and throat in 15 or 20 per cent of the cases. These lesions are sometimes responsible for severe mutilations of the nose and upper lip as well as of the pharynx. The lesions of the nose and throat are usually preceded by one to fifteen years by cutaneous ulcers, which are extremely sluggish and may last for years. They do not show the tendency to spontaneous healing of oriental sore. It is also questionable whether a permanent immunity follows healing in the American type of the disease. It is probable that some species of Phlebotomus serves as the vector. There is, however, no known animal reservoir corresponding to the dog, which is often infected with oriental sore.

Laboratory investigations suggest that Leishmania tropica and Leishmania braziliensis are different species and the causative organisms of oriental sore and American leishmaniasis respectively. Noguchi found that cultures of these organisms as well as of Leishmania donovani (kala-azar) agglutinated only cultures of their respective organisms and concluded that there were three separate species of Leishmania. His work was confirmed by Kligler but not by others. However, Geiman has lately observed cultural differences when using the chorioallantoic membrane of the chick embryo. Cultures of Leishmania tropica were produced in twenty-six passages, whereas Leishmania braziliensis lived only to the second passage. It has also been suggested that certain organisms growing in symbiosis with Leishmania may be responsible for the clinical differences in the two types of the disease. Seidelin found a gram positive diplococcus which, in 2 cases at least, was the only other associated organism, and in 1 case the skin was unbroken.

The treatment of American leishmaniasis is less satisfactory than that of oriental sore. The cutaneous lesions yield to antimony and potassium tartrate, and this

remedy may cure the lesions of the mucous membranes. It may fail to cure the latter lesions, and better results have been obtained in Brazil by using a French arsenical preparation known as "Eparseno."

PINTA

The term pinta is derived from the Spanish word *pinta*, meaning a spot, and, like many other tropical diseases, it has numerous local names. In Mexico it is called mal del pinto and in Colombia carate. These two countries show the greatest incidence of the disease, a careful survey in the southern half of the republic of Mexico having shown over 270,000 cases. The disease is also seen to a less extent in Venezuela, in Peru, in Equador, in some of the islands of the West Indies and in Central America.

Pinta is an infectious disease caused by a spirochete which is morphologically identical with the organisms causing syphilis and yaws. It has no relationship to fungi, as was erroneously stated in textbooks for forty years.

The first clue as to the true nature of the disease was the discovery by Menk in 1927 that 75 per cent of cases gave a positive Wassermann reaction. With improved technic this was later found by the Mexican commission to be close to 100 per cent in the pigmentary stage of the disease. The causative organism was discovered in August 1938 by Grau Triana and Armenteros working in the laboratory of Saenz in Havana. In the following year Leon y Blanco proved that the disease could be inoculated in man and that it frequently showed primary and secondary lesions of nondescript character which lasted for months or years. He also proved that the disease was inoculable in persons suffering from latent syphilis.

Previous to the past four years it was thought that the manifestations of pinta were confined solely to pigmentary changes in the skin. The most characteristic change in color in the pigmentary or late stage is a leaden or slaty blue which occurs in patches or freckles, especially on the exposed parts of the body. Favorite sites include bony prominences such as the forehead, nose, malar region, knuckles, knees and ankles. The eruption often shows a tendency to symmetry, though in rare instances it may involve only one side of the body (hemipinto). Blue patches may also affect the mucous membranes of the mouth. Eventually the blue color tends to disappear and may be followed at first by partially depigmented areas and later by completely depigmented ones simulating ordinary vitiligo.

Red pinta is the somewhat misleading term used for a rare type of eruption. It consists simply of a generalized, mild flushing of the skin similar to the appearance of a person after taking a hot bath. This type is associated with the ordinary blue pigmentation and depigmentation.

As pinta affects the dark races almost exclusively (Indians, Negroes and those of mixed blood), it is obvious that the vitiligo-like areas may be extremely disfiguring. This usually constitutes the only ill effect of the disease, as it apparently does not cause subjective symptoms and does not affect the general health.

There is no known vector of pinta, and it is most probable that the disease is transferred from one person to another by contact.

The course of the disease when untreated is extremely chronic, lasting often for decades. The early lesions respond well to antisyphilitic treatment and the same is true of the blue areas in the late (dyschromic) stage. However, when the stage of complete depigmentation (vitiligoid) is reached the change in the skin is permanent. Pinta leaves no sequelae except permanent depigmentation in untreated cases. It is not a serious disease except for the cosmetic defect, which at times is most disfiguring.

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TROPICAL LYMPHANGITIS AND ABSCESSES

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During the period 1926-1928 I conducted an investigation in British Guiana, under the egis of the Tropical Diseases Committee of the Royal Society of London and the London School of Hygiene and Tropical Medicine, into the bacterial complications of filariasis. Studies were made of the frequency and sites of occurrence, distribution by age, race and sex, clinical manifestations and bacteriology of all cases of lymphangitis, abscess and elephantiasis admitted to the inpatient and outpatient departments of the Public Hospital, Georgetown, between June 1927 and September 1928; of the serologic relationship between strains of the beta hemolytic streptococcus isolated from cases of lymphangitis with abscess in British Guiana and the commonest strain of the same organism isolated from the throat in cases of scarlet fever in New York City; of the relationship between the cutaneous response to inoculations of toxin prepared from the British Guiana and New York streptococcus strains and the presence of Microfilaria bancrofti in the peripheral blood; of the relationship between the nature of the organism found in abscesses and the presence of Microfilaria bancrofti in the peripheral blood of the same individual, and of the relative distribution of Microfilaria bancrofti among the different races and age groups of Georgetown. The choice of British Guiana for the work was a fortunate one in that the population is chiefly composed of three races, among whom it has long been known that the manifestations of filariasis differ considerably in degree and in frequency of occurrence. The racial groups include East Indians, Negroes and Portuguese and Mixed, the latter term denoting individuals having both Negro and Portuguese blood. The results of the investigation were published as No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine.[1] As the memoir is the only report yet published in which an attempt has been made to clarify the relation between the clinical entities of lymphangitis, abscess and elephantiasis on the one hand and the disease agents Wuchereria bancrofti and the beta hemolytic streptococcus on the other, much of the data of the present paper have necessarily been derived from it.

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1. Grace, A. W., and Grace, F. B.: Researches in British Guiana, 1926-1928, on the Bacterial Complications of Filariasis and the Endemic Nephritis, No. 3 of the Memoir Series of the London School of Hygiene and Tropical Medicine, London, 1931.

TROPICAL LYMPHANGITIS

The geographic distribution of tropical lymphangitis has not yet been accurately determined. In view of its undoubted close association with Wuchereria bancrofti, its presence should be suspected in areas where the parasite is endemic, namely in almost every tropical and subtropical country. The term "tropical lymphangitis" is restricted in this paper, and should always be restricted, to those cases which arise without any detectable break in the skin of the segment of the body of which the lymphangitic area forms a part. Such lymphangitis is rare in temperate latitudes in which the inflammatory condition is almost invariably the sequel of trauma or, much less frequently, of dermatophytosis. The precipitating causes of tropical lymphangitis (hereafter referred to as lymphangitis), as construed by its sufferers, are manifold and include a sprain, a wrench or getting the feet unusually wet or cold; the great majority of attacks, however, arise without any apparent cause. Lymphangitis is generally of sudden onset and affects the lower limb in about four fifths of all attacks; the other structures affected, in descending order of frequency, are the upper limbs, the breast and the scrotum. The distribution of attacks in the lower limbs is along the line of the great and small saphenous veins, where three areas are particularly involved, namely the middle of the inner part of the thigh, the upper inner portion of the leg and, least frequently, the middle of the calf. In the upper limbs the disease is usually found along the inner aspect, the upper portion of the upper arm being rather more frequently attacked than the corresponding site of the forearm. In the breast and scrotum the upper outer quadrant and the most dependent part, respectively, are the common sites of involvement. Lymphangitis is very largely a disease of young people. First attacks occur in almost 80 per cent of cases before the age of 30 and most frequently in the age group 10 to 19. If one also includes recurrences, only about 60 per cent of cases are found under the age of 30 years and the maximum number of attacks appear in the 20-29 age group. Both extremes of life may be attacked; the youngest patient was 18 months old and the oldest 74 years. There is sometimes a striking difference in the relative frequency with which lymphangitis occurs among different races living under approximately the same conditions; this applies particularly to the Portuguese and Mixed on the one hand, who suffer heavily, and the East Indians on the other, in whom the disease is uncommon. Women are more frequently affected than men in the ratio of about 3 to 2.

The attack of lymphangitis is invariably of sudden onset and is ushered in with severe, deep-seated pain localized to a small area. In the recurrences, which are common, the pain usually begins in the same site as that originally affected. Within a few hours erythema has developed over the painful area and, together with the pain, begins to spread, the latter throughout the whole of the segment of limb or organ involved and the erythema in streaks along the lymphatics toward the adjacent nodes. The temperature now begins to rise, reaching a peak of 102-103 F. in about six hours, by which time the attack is at its height and the patient is prostrated. At this point the affected area is intensely painful, erythematous, tense and edematous, and lymphangitis is well defined. The satellite nodes are enlarged and tender but there is little erythema of the overlying skin. At the end of twenty-four hours the temperature begins to fall, the signs and symptoms to abate and within the next two days the acute attack has passed off. Pain, however, remains in the part for another three or four days, after which the latter presents the same appearance as it did before the attack. It is impossible to predict when lymphangitis will recur, for there is no time relation between successive attacks. The period of remission may be measured in days, weeks, months or years or there may be only one attack in all. The description just given fits the common type of attack. Milder cases are found in which the involved area is no larger than the palm of the hand and the patient is so little incovenienced that he can carry on his regular work; in others, however, the entire trunk and limbs may be intensely painful and erythematous and the constitutional symptoms of such severity as to endanger the life of the patient. Such severe attacks may last as long as seven or eight weeks. Lymphangitis is not associated either with desquamation of the skin, or vesicle or bulla formation, or with softening and fluctuation of the satellite nodes. In about 10 per cent of cases of lymphangitis, nodules appear in the center of the involved area. They are very hard, exquisitely tender, freely movable on the deeper tissues, and measure approximately 2 by 2 by 0.5 cm. They are attached to the overlying skin, which is erythematous and edematous but not elevated, and are wholly within the subcutaneous tissue. Over four fifths of the nodules subside without softening and disappear completely within a week; the remainder develop into an abscess which contains the beta hemolytic streptococcus in pure culture. In about 20 per cent of hospitalized cases of lymphangitis an abscess appears in the affected area. It requires about eleven days, with limits of three and twenty-one days, after the onset of an attack for such an abscess to be ready for evacuation; by that time the acuteness of the attack has subsided considerably. The exact proportion of persons who develop abscess in association with lymphangitis is not known, as the milder cases, which constitute the majority, not only are not seen in the hospital but are often successfully treated with home remedies.

Attacks of lymphangitis in limbs and organs which are elephantoid closely resemble in most aspects those in nonelephantoid tissues. There are, however, three differences. First, the elephantoid structure reacts as a whole with pain, erythema and edema; the localized areas of involvement so common in nonelephantoid tissues do not occur. Second, the hard subcutaneous nodules are found only about one fourth as frequently in lymphangitic attacks in elephantoid as in nonelephantoid tissue. Third, the elephantoid limb is slightly more prone to the development of abscesses following an attack of lymphangitis than is its nonelephantoid counterpart.

Lymphangitis is one, but in British Guiana the least common, of the predisposing causes of elephantiasis, which most frequently arises about two years after the appearance of an abscess in the part which subsequently becomes elephantoid. There is indirect evidence to show that such abscesses are due to the beta hemolytic streptococcus, which is also by far the commonest organism producing infections of elephantoid structures, outnumbering its nearest rival, the hemolytic staphylococcus, by 4 to 1.

ORGANISMS ASSOCIATED WITH LYMPHANGITIS IN ELEPHANTOID AND NONELEPHANTOID TISSUE

Material for this study is best obtained during an attack of lymphangitis by culture of blood, of material aspirated from nodes and subcutaneous tissues and of pus from abscesses. I found positive blood cultures in approximately 10 per cent, and Rose [2] found positive node punctures in almost 90 per cent of persons hospitalized with acute lymphangitis. The sole organism found in the cultures was the beta hemolytic streptococcus, which was also present in pure culture in 25 of 27 abscesses which followed acute lymphangitis. There are no statistics on the frequency of recovery of bacteria by aspiration of inflamed subcutaneous tissues.

The close association of the beta hemolytic streptococcus and lymphangitis and the rarity of such lesions in temperate climates raises the question of the existence of a type of the organism peculiar to lymphangitis or to British Guiana. An answer to this query was sought by studying the fermentation reactions, morphology, serologic reactions, virulence and skin reaction to toxins of the British Guiana beta hemolytic streptococci in comparison with those of beta hemolytic streptococcus strains commonly found in New York. The results of the study were as follows:

Fermentation Reactions.—Of 68 British Guiana strains, 61 fell into the pyogenes, 5 into the subacidus and one each into the anginosus and equi groups.

Morphology.—Sixty-one British Guiana strains, when streaked on 5 per cent horse blood veal agar and examined microscopically, fell into three morphologic types, I, IIa and IIb, which could be readily identified by tint, periphery and granularity of the colony. Type I constituted 14.8 per cent and was light in color, had a noncrenated periphery and was free, or almost free, from granularity. Seventy-two and one-tenth per cent fell into type IIa and were dark with a finely crenated periphery and well defined granularity. Thirteen and one-tenth per cent belonged to type IIb and were much darker and much more coarsely granular than those of type IIa; the periphery was only roughly circular owing to the coarseness of the crenations. All of the type IIb strains belonged to the subacidus group. No mucoid strains were observed.

Serologic Relations.—The criterion of identity of strains was reciprocal absorption of agglutinins. A stable homogeneous suspension of organisms for agglutination tests was made by repeated subcultures in phosphate glucose broth. Six British Guiana pyogenes strains isolated from abscesses in as many individuals during an attack of lymphangitis were studied serologically. Only one dissociated into fine and coarse variants during subculture; it is the fine variant which is considered here. Five of the six strains were identical but there was no reciprocal absorption between them and a common scarlet fever strain from New York. Eight British Guiana subacidus strains, all belonging to type IIb, were serologically identical with one another and different from subacidus strains obtained from London and New York.

Virulence.—There was practically no increase in the virulence, originally low, of strains of type I and type IIa after passage through mice. The virulence of the very coarse type IIb strain was so low that 1.0 cc. of a twenty-four hour broth culture failed to kill mice.

2. Rose, F. G., quoted in reference 1.

Skin Reaction to Toxins.—Toxin prepared from three British Guiana strains was employed in almost three hundred tests in conjunction with that derived from a scarlet fever strain; there was a high degree of correlation between the results obtained with all the strains.

Neutralization of Toxin by Antiserum.—Toxin prepared from a British Guiana strain associated with lymphangitis was not neutralized by antistreptococcus serum derived from a scarlet fever strain. No toxin demonstrable by intradermal tests on Dick positive children was produced by the very coarse type IIb strains.

It would appear, then, that the hemolytic streptococcus of British Guiana has the following chief characteristics: The texture of the colony is principally granular; a common agglutinogen was found among a number of strains obtained from cases of lymphangitis; there was absence of serologic relation with a common scarlet fever strain; a serologically unique subacidus group exists; virulence for mice is low; there is no production of toxin by strains of very coarse colony texture; toxin produced by nongranular strains is not neutralized by antiserum derived from scarlet fever streptococci; approximately 90 per cent fall into the pyogenes group, and a toxin similar in its intradermal effect to that derived from a common scarlet fever strain is produced. It is evident, then, that there is some degree of difference between the beta hemolytic streptococcus of British Guiana and that of temperate climates.

ABSCESSES

The frequency and site of occurrence of abscesses varies considerably in different tropical countries. Thus the annual incidence of abscesses per unit of population is over eight times, and the proportion of lower limb abscesses over four times, as high in British Guiana as in Jamaica.[3] It is most likely that this difference is related to the less common use of footwear and the lower standard of living in British Guiana, where approximately 350 abscesses are opened annually in the Public Hospital in Georgetown, a city of 53,000 inhabitants. In over three fourths of the cases there is no visible lesion to account for the development of the abscess. Staphylococci are responsible for 53 per cent and the beta hemolytic streptococcus for 33 per cent, and about 12 per cent are bacteriologically sterile. These ratios apply not only to the population of the colony as a whole but also, with only slight divergence, to each of the three races in British Guiana, namely the Negro, the East Indian and the Portuguese and Mixed. Infections occur in the lower limbs twice as frequently as in the upper limbs and four times as often as in the chest wall and abdominal wall. While all ages are subject to the development of abscesses, the maximum incidence is found in the third decade. The proportion of infections due to the staphylococcus is highest in the first decade and declines with increasing years, whereas the reverse is true for the streptococcus. Males are affected more frequently than females in the ratio of five to three. As has been pointed out, the staphylococcus is most rarely responsible for attacks of lymphangitis. Not all infections with the beta hemolytic streptococcus, however, in endemic filarial countries are associated with lymphangitis—in fact, only about one fifth are so associated. It is impossible, therefore, to predict the nature

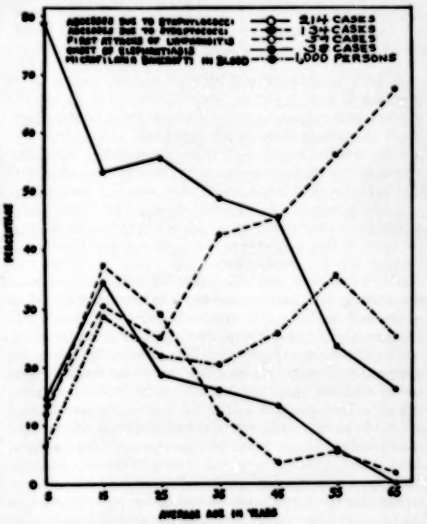
3. Grace, A. W.; Grace, F. B., and Warren, S.: The Parallel Incidence of Filaria Bancrofti and the Beta Hemolytic Streptococcus in Certain Tropical Countries, Am. J. Trop. Med. 12: 493 (Nov.) 1932.

of the organism in an abscess unassociated with lymphangitis; a rough guide is sometimes obtained from its location, the staphylococcus being predominant in infections above the shoulder and the streptococcus in the scrotum. Abscesses occur in the subcutaneous tissues and in the muscles, both superficial, as in the recti abdominis, and deep, as in the inner aspect of the quadriceps femoris. An intramuscular abscess may contain either the staphylococcus or the streptococcus. The staphylococcus has a tendency to produce multiple abscesses, often at widely separated sites, which are prone to recur. Specimens of pus from staphylococcic and streptococcic abscesses are, in most instances, identical in appearance. Deep, long standing, intramuscular streptococcic abscesses, however, contain pus which is characteristic in that it is very fluid and of a dirty brown tint, probably from altered blood. Such abscesses are usually the result of an attack of lymphangitis, occurring three weeks to a month previously, in an elephantoid leg. The patient is often unaware of the existence of the abscess, which may contain as much as a pint of pus.

THE RELATION OF WUCHERERIA BANCROFTI TO LYMPHANGITIS

It was concluded in the Memoir [1] that "it is possible that lymphangitis and elephantiasis do not occur in a race or age group or country to any extent in the absence of Filaria bancrofti, and that the exciting cause of practically all the attacks is the beta hemolytic streptococcus, which may itself be of a particular type." It will be noted from the chart not only that the incidence of beta hemolytic streptococcus abscesses, the percentage of individuals showing Microfilaria bancrofti in the blood and the incidence of lymphangitis and elephantiasis are all low in the first decade of life but also that they all rise rapidly in the next decade. It is impossible to avoid the conclusion that there is a relation between these entities.

Sufficient evidence has been advanced in this paper to show the connection between lymphangitis and the beta hemolytic streptococcus. What part does Wuchereria bancrofti play in the picture? It seems certain that it does not of itself produce lymphangitis.[4] Any theory of the causation of lymphangitis, however, which omits the worm as a factor must, perforce, ascribe the condition to the beta hemolytic streptococcus alone. As that organism is widely distributed in temperate climates, where tropical lymphangitis is a rarity, it would be necessary to prove, in support of this theory, that the beta hemolytic streptococcus of lymphangitis is of a vastly different character from that of temperate climates. The differences between the organisms from tropical and temperate latitudes have already been stated and are, in my opinion, insufficient to warrant the designation of the beta hemolytic streptococcus as the sole factor in the production of lymphangitis. I believe that the sequence of events leading to an attack of lymphangitis is as follows: There is some degree of obstruction to the flow of lymph, owing to the presence of the adult worm in the lymph nodes and channels. The existence of lymph stasis renders the tissues more susceptible to infection by the beta hemolytic streptococcus. Once infection has occurred, the tissues of the affected area become hypersensitive to the beta hemolytic streptococcus and its products, and attacks of lymphangitis may be occasioned by organismal or toxic stimuli of intensity too low to be appreciated by tissues previously uninvolved. Evidence in support of this hypothesis is twofold and indirect. First, Drinker [5] has shown that the lymphedematous leg of a dog is not only susceptible to spontaneous infection with hemolytic streptococci but could be infected very readily by injection of hemolytic streptococci. Second, the East Indian has the lowest microfilarial rate and also the lowest incidence of lymphangitis and elephantiasis of the three chief races in British Guiana; that the infrequent occurrence of these clinical entities is not due to a relative insusceptibility to the beta hemolytic streptococcus is shown by the fact that streptococcic abscesses occur just as commonly in the East Indian as in the Negro and in the Portuguese and Mixed.



Incidence at different ages of abscesses due to staphylococci, abscesses due to beta hemolytic streptococci, first attacks of lymphangitis, onset of elephantiasis and Microfilaria bancrofti in blood.

By what means does the presence of Wuchereria bancrofti render the tissues more susceptible to infection with the beta hemolytic streptococcus? An unsuccessful attempt was made to answer this question by subjecting 52 individuals, whose night blood had previously been examined, to skin tests with scarlet fever and British Guiana streptococcus strains, and also by studying the night blood of 300 persons with abscesses, the bacterial nature of each of which was known. No relation was found between the presence of microfilaria in the blood and either a positive reaction to streptococcus toxin or the existence of the staphylococcus or streptococcus in abscesses.

4. Croll, quoted in reference 1.

5. Drinker, C. K., and Yoffey, J. H.: Lymphatics, Lymph and Lymphoid Tissue, Cambridge, Harvard University Press, 1941.

TREATMENT AND PROPHYLAXIS

Prior to the introduction of the sulfonamide drugs, treatment of lymphangitis consisted in rest, local application of heat and acetylsalicylic acid. Vaccines prepared from local strains of the beta hemolytic streptococcus were felt to be of value in reducing the frequency of recurrences. At present the most efficacious remedy is either sulfathiazole or sulfadiazine in doses of 1.5 Gm. three times daily for one week. Abscesses should be incised and drained. No means exist for destroying or removing the adult worms or microfilariae. As Wuchereria bancrofti is transmitted by the bite of the female Culex fatigans, antimosquito measures will help to reduce the incidence of the disease.

LEPROSY

EPIDEMIOLOGY AND NATURAL HISTORY

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It may be said without risk of serious contradiction that less is known of the essential factors in the pathogenesis and transmission of leprosy than of the other great infectious diseases of mankind. This defect in our knowledge stands out more prominently when one remembers that leprosy has held the attention of countless persons over centuries of time and has been recognized by layman and physician alike as one of the major scourges of the human race. It is a noteworthy historical fact, in this connection, that leprosy was among the first, if not the first, disease the cause of which was ascribed to a bacterial organism. Hansen first reported the finding of a bacillus as the possible causative agent of leprosy in 1874. It was not until 1882 that Koch announced the identity of the bacillus of tuberculosis.

The faltering progress of our knowledge is to be attributed in part at least to the remoteness of the great endemic foci of leprosy from the centers of scientific investigation and to the barriers raised against its study by the unique emotional qualities which have characterized the attitude of man toward those afflicted with the disease. Persecution and social ostracization have been the fate of the leprous person. The almshouse and the asylum have been his refuge rather than the hospital from which he could look forward to rehabilitation through an objective approach to the solution of his problems. Even today there are rumors of the massacre of its victims.

But, in spite of these accidents of geography and human behavior, many serious attempts have been made to understand the nature of the infection. Most of these, however, have ended in failure. There is yet no certainty that the Hansen bacillus has ever been cultivated on artificial mediums nor has the disease in progressive form been established in laboratory animals. Direct transmission to human subjects by inoculation of infectious material has also failed. Without these achievements, scientific inquiry is handicapped and the position of Mycobacterium leprae as the cause of the disease remains unsettled.

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Furthermore, there is a lack of understanding of the natural history of leprosy, without which there can be no sound judgment of the effects of therapeutic measures. Interpretation of the manifestations of infection is confused and complicated too frequently by our engrossment in the naming of the types of disease and the forms of lesion, a practice which too often tends to obscure rather than enlighten our understanding. An almost total absence of any accurate quantitative knowledge of the incidence of infection, and of the rate at which it attacks various groups in the population, prevents a scientific evaluation of the effects of regulatory control.

But, regardless of the many shortcomings in our knowledge and the absence of a rational plan of prevention, leprosy has been on the decline as an important force of morbidity in Europe and the British Isles since the thirteenth century, when it reached its zenith in that part of the world.[1] In Asia it would seem that the rate of infection now remains stationary, but this is only an impression.

It has been predicted that the disease will disappear through the application of sound principles of public health technic. This undoubtedly oversimplifies the explanation of the gradual decline of the infection. But, as Muir [2] has stated, "Whatever the actual causes which control the spread of leprosy, it seems clear that it belongs to a certain stage of human social development." It is not found among nomadic and aboriginal peoples until they forsake their tribal customs and merge with and adopt the life and practices of more civilized people. But as their state of civilization advances with its attending improvements in personal hygiene, nutrition and sanitation the decline of the disease becomes apparent.

Leprosy, then, may be taken as a good example of the effect of social and economic forces in the production of disease. This aspect of the problem requires more careful consideration in the epidemiologic study of the infection. To give it such might aid in shedding light on the reasons for the localization of the disease in certain communities and assist in explaining on grounds other than heredity the apparently higher rate of attack among certain racial elements, frequently foreign born. As another has written, leprosy is a "disease of the crowded house, room and bed." It may well be that the observations of Jonathan Hutchinson,[3] who attributed the disease to the consumption of tainted fish, have in them the essence of truth. It is not so much the eating of spoiled fish but the necessity of so doing that should claim our attention.

LEPROSY IN THE UNITED STATES

Today leprosy as a serious problem of public health is limited chiefly to the tropics and subtropics. The great foci of disease are in central Africa, in India and in parts of China, with smaller endemic areas in Central and South America and in Mexico. As a problem in this country leprosy is only of minor significance. There are but few endemic centers in which it seems the infection can be transmitted. These are confined to three of the states bordering the Gulf of Mexico, namely Louisiana, Texas and Florida. Other localities, such as

1. Newman, George: On the History of the Decline and Final Extinction of Leprosy as an Endemic Disease in the British Islands, London, The New Sydenham Society, 1895.
2. Muir, Ernest: The Epidemiology and Control of Leprosy, Tr. Roy. Soc. Trop. Med. & Hyg. **31**: 377, 1938.
3. Hutchinson, Jonathan: On Leprosy and Fish-Eating: A Statement of Facts and Explanations, London, Archibald Constable & Co., Ltd., 1906.

New York City, in which the leprous are always to be found, are not areas of infectivity. "With a single exception," in the words of McCoy [4] of the Public Health Service, "I have been unable to find any record . . . that any one has ever been infected with leprosy in New York City, although in the aggregate over a period of a few decades literally hundreds of lepers have been domiciled there for varying periods of time."

The oldest focus of infectivity in Texas is in Galveston. This was made the subject of an epidemiologic report by Boyd and Fox [5] in 1920. No important conclusions were drawn from this investigation, but it is of interest to note, in view of the attempts to relate the human infection to the murine type of leprosy, that from an examination of some 23,000 rats for the plague in this locality only 7 leprous rats were identified by the detection of acid fast bacilli in smears from their tissues.

MURINE LEPROSY

In 1903 Stefansky,[6] working in Odessa, observed a leprosy-like disease in rats. Almost at the same time, and independently, Dean [7] in England described the same disease. In certain anatomic manifestations, and in the presence of acid fast bacteria, the disease of the rat resembles human leprosy. The organism of murine leprosy, Mycobacterium leprae murium, has been regarded by some [8] as perhaps identical with the organism of human leprosy, Mycobacterium leprae. But there is no convincing evidence to support this assumption. It may possibly be, however, that studies of this organism in the future will shed light on the relationship of the acid fast mycobacterium to human leprosy and help elucidate some of the problems related to the disease.

In this connection I wish to refer to a study of the epidemiology of leprosy in Australia by Cook,[9] who reported that the disease showed a distribution like that of the rat flea Xenopsylla cheopis. He raised the question of an insect vector with the rat serving as the reservoir of infection, the assumption being that the organisms of murine and human leprosy were identical.

TRANSMISSION OF INFECTION

The communicability of leprosy has been acknowledged since Biblical times. However, this view was discredited temporarily by Danielssen and Boeck when they introduced the concept of hereditary transmission. In Norway the focus of the disease failed to disappear, as had similar foci in other parts of Europe. These observers saw that the disease tended to be confined to certain families. Their remarkable publication on leprosy, "Om Spedalskhed," remains one of the classic landmarks in the history of the disease.[10] The part hereditary influences may have in affecting the susceptibility of the individual to leprosy still holds the attention of some investigators.[11]

I mention this departure from the accepted theory of transmission to direct attention to the familial nature of the disease and the problem of household contact. I have already referred to the need of quantitative data on the rate of transmission of infection as a necessary prelude to the scientific study of the results of control and call attention here to the important work of Doull,[12] who studied the attack rates of leprosy within the family group. This he did in retrospect, using material from the Philippine Islands, by applying the principles of the life table to the measurement of the risk of attack.

HOUSEHOLD ATTACK RATES

For all ages, Doull found the annual risk of contracting leprosy was about five times as high among those having household exposure as among the group who were not subjected to this risk. The attack rates for those exposed were better demonstrated by cumulating the rates to the age of 20 years. Assuming that there was no selective mortality among the leprous, it was found that 170 per thousand of family contacts could be expected to show evidence of the disease. For those not in household risk, the comparable figure was 30 per thousand.

Evidence showing the higher susceptibility of those in early life was also obtained from this study. The ratio of the attack rate for the age group 10 to 14 years to the rate for the group 20 to 29 years was 5.1 to 1 and, for the nonexposed, 2.8 to 1.

The results of Doull's analysis support the commonly accepted view of the infectivity of the disease on close and prolonged contact. Further application of the same statistical technic to the measurement of infectivity under varying circumstances is desirable.

DISTRIBUTION OF LEPROSY IN CHINA

The wide distribution of leprosy throughout the world has raised questions as to the geographic influences on the transmission of infection. Rogers,[13] from a study of the disease, especially in India, reached the conclusion that the only factor of this nature common to the scattered endemic foci was a state of high atmospheric humidity.

The vagaries of the geograhic distribution of leprosy are well illustrated by a study of the location of endemic areas in China. Over a period of twenty years, while a member of the staff of the Peiping Union Medical College, I was interested in this aspect of the disease. Unfortunately the data on the subject are now beyond my reach, but it may be stated that during all that time, with a single exception, no case of leprosy was observed which had been contracted definitely in Hopei province, of which Peiping is the capital. The only patient who had resided continuously in Hopei came from a small village in the southern part of the province near the Shantung border. In Shantung there is a large endemic focus of leprosy.

While the number of leprous patients seen annually in the hospital in Peiping was not large, it must have been true that the city had harbored the disease for many years, perhaps centuries, a time sufficient to have allowed the establishment of an endemic focus had the environmental conditions been congenial to the transmission of the disease.

4. McCoy, George W.: Discussion: Leprosy in the United States, in Moulton, F. R.: Tuberculosis and Leprosy: the Myocobacterial Diseases, Lancaster, Pa., Amer. Assoc. for Advanc. of Sc., 1938, p. 110.

5. Boyd, M. F., and Fox, W. F.: An Epidemiological Study of an Endemic Focus of Leprosy, Public Health Reports **35**:3007 (Dec. 17) 1920.

6. Stefansky, W. K.: Eine lepraähnliche Erkrankung der Haut und der Lymphdrüsen bei Wanderratten, Centralbl. f. Bakt., Orig. **33**: 481, 1903.

7. Dean, George: A Disease of the Rat Caused by an Acid-Fast Bacillus, Centralbl. f. Bakt., Orig. **34**: 222, 1903.

8. Walker, E. L., and Sweeney, Marion A.: The Identity of Human Leprosy and Rat Leprosy, J. Prev. Med. **2**: 325, 1929.

9. Cook, Cecil: The Epidemiology of Leprosy in Australia, Canberra, Australia Dept. of Health Pub. No. 38, 1927.

10. Danielssen, D. C., and Boeck, W.: Om Spedalskhed, Christiana, 1847.

11. Aycock, W. Lloyd, and Hawkins, J. W.: Regional, Racial, and Familial Relationships in Leprosy in the United States, Public Health Reports **56**: 1324 (June 27) 1941.

12. Doull, James A.: The Importance of Field Studies of Leprosy, with Especial Reference to the Risk of Household Exposure, Am. J. Hyg. **29**: 27, 1939.

13. Rogers, Leonard: The Croonian Lectures on Leprosy Researches: I. The Epidemiology of Leprosy, Ann. Trop. Med. **18**: 267, 1924.

Peiping lies in the great North China plain. For the greater part of the year, except in early and middle summer when the rains come, the climate is very dry and the skies are cloudless. The winters are cold and the summers hot. The city is situated approximately at 40 degrees north latitude. Following this parallel to the west there is apparently no leprosy in the adjacent province of Shansi, but proceeding to the extreme western part of the country toward the highlands in the province of Kansu the disease is endemic. There are large areas of infectivity in the Yangtze valley, especially in the region of the city of Hankow and in the southern province of Kwangtung.

Before the onset of hostilities in 1937, and prior to the subsequent migration of great masses of the population, there existed in China favorable conditions for the epidemiologic study of leprosy. The unique place of the family in the social organization with the close association of its members, including not infrequently two and three generations under the same roof, the widely scattered endemic areas embracing extremes of climate and topography and the accompanying ethnologic and demographic variations in China's population offer rich opportunities for investigation. As it is, the only record of the pattern of distribution in the country is a general survey made through the medium of questionnaires by Fowler,[14] which should be read by those interested in the subject.

NATURAL HISTORY OF LEPROSY

There is little need at this time to enter into a description of the clinical phenomena of leprosy. However, it is pertinent to the discussion to emphasize the need for a clearer and fuller understanding of the natural history of the disease. Too frequently we are influenced by the formalized and static picture given in the books. Leprosy is a disease of great chronicity and as such it is subject to a wide variety of changing clinical sequences. To divide the disease into carefully defined categories, as for example nodular and anesthetic, is to miss the point of its evolution.

For the most part, if one will only observe the patient long enough and carefully enough there will be found periods of acute reaction alternating with periods when the infection is quiescent. The change in tempo is sometimes critical and profound. Periods of inactivity may persist for months or even years, when some force, usually not identifiable, appears to precipitate a relapse and further the progress of the disease.

Relapses are characterized by signs of acute reaction. There is evidence of redissemination of the infective agent. The cutaneous lesions may be exanthematous in form and distribution. Some may remain after the eruption as a whole has subsided to establish new foci of chronic inflammation. Areas of anesthesia may increase in size, and new disturbances in sensibility are usually to be detected at the site of fresh inflammatory lesions. The phenomenon of dissociation of the elements of sensation under such circumstances is noteworthy. The sense of temperature is lost first, followed as a rule by the loss, in succession, of the perception of pain and touch. Last of all, and rarely, is the loss of the sense of pressure. Nerve trunks may thicken and lymph nodes enlarge. Areas of skin, sometimes involving the entire face or a buttock, may acquire a swollen erysipelatous appearance.

14. Fowler, Henry: A Survey of Leprosy in China, China Med. J. **39**: 584, 1925.

ERUPTIVE LESIONS

As in syphilis, a great variety of eruptive lesions, both acute and chronic, may be found. The individual pattern of their form and distribution may vary considerably from patient to patient. This depends, no doubt, on the allergic capacity of the skin under varying circumstances. Chronic granulomatous lesions, not unlike those of tuberculosis in plaques and configurations, may develop.[15] In these the histologic picture is that of typical tubercle formation. In fact the most typical tubercles of the skin are found not in tuberculosis but in leprosy.

Acid fast bacilli may, or may not, be found in the granulomatous lesions. Their absence in such cases need not cause surprise. Failure to find them by staining methods does not mean their absence in the tissue. In tuberculosis of the skin one almost never is able to demonstrate in fixed tissue specimens by staining methods the presence of acid fast bacilli. But almost always in such cases tuberculosis can be produced in susceptible animals by inoculation with portions of the material found to be free of organisms by microscopic examination.

The ease with which acid fast organisms can be demonstrated depends on the stage of inflammation when the search is made and on the method of examination. Fixed tissue preparations of skin and lymph node are best for this purpose.[16] Very early and late in the course of the dermatitis the organisms are difficult, if not impossible, to find. In the latent case careful searching of many sections may not reveal a single acid fast form. Yet in a month's time they may be found in profusion should the patient develop an acute relapse.

TREATMENT

The value of the derivatives of hydnocarpus oil in the treatment of leprosy is difficult to define. Failure to take into account the rhythmic course of the infection, with its periods of alternating activity and latency, has led not infrequently to erroneous judgment of the efficacy of the drugs. From the experience in Peiping I am left wholly unconvinced that they serve any useful purpose. At times, when during the course of their administration acute relapse ensued, it was only reasonable to suspect that the hydnocarpates were in some way responsible. These reactions would occur occasionally even when small and carefully regulated doses of the drug were given. Whether because of the drug, I do not know.

For the present, it seems to me, a regulated way of living, with rest and nutritious food, and protection from injury, outside an endemic focus of infectivity, offers the patient the best chance of recovery.

No inflexible regulations for the quarantine of persons afflicted with leprosy need be set. In those places where the disease shows itself to be endemically infective, segregation may be practiced if it does not punish the patient. To punish him is to defeat in the end the purpose of quarantine. The leprous person does not as a rule require asylum nor an almshouse; he does need hospitalization with the purpose always in mind of returning him to a life of usefulness and of self respect.

15. Wade, H. W.: Tuberculoid Changes in Leprosy; Pathology of Tuberculoid Leprosy in South Africa, Internat. J. Leprosy **2**: 7, 1934.
16. Hu, C. K., and Mu, J. W.: Demonstration of Bacillus Leprae by Means of Cantharides Plaster and Carbon Dioxide Snow, Nat. Med. J. of China **16**: 177, 1930.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MC CARTHY, OBERMAYER, FOX, GRACE AND FRAZIER

DR. GEORGE M. LEWIS, New York: A year's experience examining men who have returned from the tropics has convinced McCarthy that the bulk of the superficial fungous infections to which the troops are subject are the same as seen in the United States, but in an exaggerated form. Secondary bacterial pyogenic superinfection is a more common complication than in civilian dermatologic practice in the United States. This may be due chiefly to factors inherent in a tropical climate and may be influenced by conditions of combat service. The tendency to latency and consequent neglect of Trichophyton gypseum infections and resistance to treatment of Trichophyton purpureum infections, both of which are of common occurrence in the United States, suggest that the infection may not always be newly acquired in the tropics. From what is known and from what McCarthy says, the treatment of all known fungous infections and the institution of prophylaxis is desirable. To be an effective prophylactic, a remedy may be easily usable, readily available, relatively nonirritating and yet mildly fungicidal. Talc reinforced by 0.5 per cent salicylic acid and the same concentration of thymol fulfils these conditions and also tends to counteract perspiration. When applied under and between the toes once or twice daily, the danger of acquiring a new infection is greatly lessened. The same remedy may be useful in treating mild fungous infections of the feet. All evidence points to the effect being due to a simple screening of the sun's rays by the lesions (Lewis, G. M., and Hopper, Mary E.: Pseudoachromia of Tinea Versicolor, *Arch. Dermat. & Syph.* **36**:850 [Nov.] 1936). When peeling of the skin occurs there is then manifest a contrast between the unchanged skin under the patch of tinea versicolor and the surrounding sun tanned skin. Treatment with 10 per cent solution of sodium thiosulfate continued for one to two weeks before exposure to the sun's rays will prevent the development of these apparently depigmented areas. Two statements of McCarthy regarding T. purpureum (rubrum) are at variance with my experience. If a suitable medium (using dextrose) is inoculated with T. purpureum, a red-purple pigment is invariably produced in the substrate (Lewis, G. M., and Hopper, Mary E.: Pigment Production by Fungi: 1. Nutritive Requirements, *ibid.* **44**:453 [Sept.] 1941). Because of this constant and primary characteristic, the laboratory recognition of the fungus is facilitated. At least 5 instances of follicular infection to T. purpureum have been recorded. The fungus may be considered an ectothrix, Trichophyton and not an Endodermophyton, as McCarthy states.

DR. LEE MCCARTHY, Washington, D. C.: I wish to thank Dr. Lewis for his painstaking discussion of my portion of the symposium. I agree with him that the problem of the control of mycotic infections at the end of the war will have to be largely in the hands of the general medical practitioner and it is with this end in view that the present symposium was prepared.

COL. J. E. ASH, M. C., U. S. Army: Little of the material and data that have come to the Army Medical Museum from our theaters of operation are as yet available for publication, but several years' experience in the tropics furnish some items that might be added to Dr. Obermayer's list. I should like to emphasize the possibilities that can arise from chigoe bites. Indolent, refractory ulcerations that may be 8 to 10 cm. in diameter, and at times gangrene, especially of the toes, may result. It is also necessary to stress the frequency and persistence of the nonspecific ulcers of the skin that may result from any insect bites and from scratching, as well as from incidental trivial trauma. These lesions are usually pyogenic, but they may be granulomatous. They are particularly common in children. A not too serious but very painful and fairly common lesion seen in some of our foreign possessions is produced by the larva of Dermatobia cyaniventris. A favorite site for the female of the species to lay her eggs is on the exposed shins, but the head and neck may be involved. It is a spectacular boil-like lesion with a fairly large opening through which the larva protrudes and retracts its attenuated caudal end. The larva is a flask shaped affair and cannot be extracted intact through the skin orifice. Surgical excision of the whole lesion is the treatment of preference. It is fairly common in Central and South America. Mention should also be made of Larva migrans (bot fly). Two of the Arachnidae might be added to the list: scorpion and tarantula. They give very painful bites which can lead to constitutional symptoms. The centipede—not the small soft thousand legger of the temperate zones but the formidable armored Scolopendra that may reach the length of 12 inches—can make a surprisingly large gash by a sweeping motion with its two vicious anterior claws. Serious local necrotic lesions and alarming general symptoms may result from the poison that he injects into the wound. Finally, the series of "stinging caterpillars" are something of a problem in Japan. There are several species: Parasa hilarata, Miresa inorata, Nygmia sp. and others. The slightest contact with these larvae causes extensive, intense irritation and there are severe constitutional symptoms that may last for several days. The reaction is much more severe than that from our own brown tail moth. The museum is indebted to Dr. R. G. Mills for the information and material on this subject that he deposited here some years ago.

DR. M. E. OBERMAYER, Los Angeles: Creeping eruption (larva migrans) should be included in a consideration of diseases of entomologic interest. However, since the disorder is more frequently caused by nematode larvae than by the migrant larvae of flies and since diseases caused by vermes do not form a part of this paper, creeping eruption was not included.

DR. MORRIS MOORE, St. Louis: The importance of tropical diseases in our present crisis cannot be overemphasized in view of the various widespread theaters of war. Dr. Fox has thoroughly covered, in a short space, the important features of yaws, cutaneous leishmaniasis and pinta. There remain, therefore, only incidental remarks which I would like to extract from my own acquaintance with these diseases and inject them into a discussion of the paper. Yaws, or frambesia, may be confused with several diseases. The frambesia form, usually considered to be the secondary stage, following the incubation period, may simulate a form of paracoccidioidal granuloma caused by Paracoccidioides brasiliensis. The type which localizes at the junction of the skin and mucous membranes and which resembles syphilitic condylomas may mimic the buccal mucosa type of paracoccidioidal granuloma caused by Paracoccidioides cerebriformis. Gangosa may be mistaken for tertiary syphilis. Mutilating leprosy must also be ruled out as well as American cutaneous leishmaniasis. Various workers have observed that the well advanced form of yaws closely resembles syphilis. However, as Stitt points out, in yaws the chief diagnostic point histologically is the pronounced involvement of the epidermis and slight change in the corium. Cutaneous leishmaniasis, an important tropical disease, may be transferred to the temperate zone. Dwork (K. G.: *Arch. Dermat. & Syph.* **45**:676 [April] 1942) surveyed the literature of the United States and Canada and listed 24 cases in addition to 4 that he reported. All cases were of Near Eastern origin. The mucocutaneous type (American leishmaniasis), generally considered to be a New World disease, may occur in the Old World. Panja (G.: *J. Indian M. A.* **7**:2 [March] 1938) published the report of a case showing nodular lesions on the tongue. He also cites Napier and Das Gupta, who reported cases in which there were lesions on the mucous membranes of the hard palate, cheek and lips. In South America cutaneous leishmaniasis may easily be confused with paracoccidioidal granuloma, both the cutaneous and the localized buccal mucosa type. Occasionally the two diseases may be found in the same patient, and this presents a problem in diagnosis. In addition to the diseases mentioned by Dr. Fox, one should consider leprosy, rhinoscleroma and neoplasms. In examining sections of lesions, histoplasmosis should be considered. In both diseases there is a proliferation of endothelial phagocytes which engulf the parasites. Leishmania and Histoplasma bear a striking resemblance and may easily be confused. Mazza and the Bassos (Misión de Estudios de Patología Regional Argentina, Univ. de Buenos Aires, 1942, Pub. No. 63) found in the first stage of Chagas' disease parasites which were leishmaniform in appearance. Pinta, mal de pinta or carate, a New

World disease, has recently been brought up to date by Pardo-Castello and Ferrer (*Arch. Dermat. & Syph.* **45**:843 [May] 1942). The disease manifests itself first as a papule (initial lesion), which becomes an oval or rounded patch. Other papules or macules form and merge to go into a second or disseminate stage. The disseminate form shows large plaques, termed pintids by León y Blanco, which may be syphiloid, lichenoid, psoriasiform, trichophytoid or eczematoid in appearance. The lesions show pigmentary changes of pink, red, purple, slate color or brown. After a course of several months the disease progresses into the late chronic stage, presenting areas of hyperpigmentation and achromia. Finally there develop late dyschromic changes showing a clinical picture resembling vitiligo. Aortic and cerebrospinal changes have been noted. The spirochete of pinta can be demonstrated among the epidermal cells, especially in the stratum malpighii. Pinta is known to occur in Peru in endemic foci.

DR. HOWARD FOX, New York: Dr. Moore is correct in saying that yaws may be confused with a form of paracoccidioidal granuloma (South American blastomycosis). In this case help could be obtained by the serologic reaction, which in the early (secondary) stage of yaws gives close to 100 per cent positive reactions. Gangosa, as Dr. Moore says, may be mistaken for tertiary syphilis. In my opinion gangosa is not a separate disease but merely a destructive sequel of another disease, which is usually yaws. It is possible, however, that the same destructive changes called gangosa may occasionally represent a terminal stage of syphilis. I agree entirely that the tertiary, destructive form of yaws "closely resembles yaws." In fact, it cannot be differentiated clinically. The purely cutaneous type of leishmaniasis (oriental sore) is a disease of the Old World. As far as I am aware, no autocthonous cases have appeared in the Western Hemisphere. The mucocutaneous type (American leishmaniasis) is confined almost entirely to the Americas, especially South America. It is true, as Dr. Moore has said, that the mucocutaneous type may be confused with South American blastomycosis. If the differentiation cannot be made by finding the respective organisms or by intradermal test, the therapeutic test with antimony and potassium tartrate may settle the diagnosis, as blastomycosis is not affected by this drug. With regard to the color changes in the dyschromic stage of pinta, on rare occasions a pinkish color may be present. This does not merit the appellation of redness, as a bright red such as scarlet or crimson is never seen in this disease. The dyschromic or pigmentary stage may appear a few months after infection with pinta, but such changes are more apt to appear after many months or even years later. Dr. Moore states that pinta is known to occur in Peru in endemic form. The disease is also endemic in many countries of Central and South America, as well as the West Indies.

DR. GEORGE CHEEVER SHATTUCK, Boston: Dr. Grace says that the term tropical lymphangitis should always be restricted to "cases which arise without any detectable break in the skin of the segment of the body of which the lymphangitic area forms a part." In this presentation of his observations on inflammatory processes in the tropics, Dr. Grace has restricted his remarks to the category of cases thus defined. He says that cases belonging to this category are rare in temperate latitudes. I question whether in connection with lymphangitis associated with elephantiasis the differentiation of Dr. Grace is useful. Is it a fact that lymphangitis in nontropical cases of elephantiasis can usually be traced to an infection which has gained access to the body by way of a locally related lesion? I do not know the answer. His observation that abscesses are more than four times as common in British Guiana, where bancroftian filariasis is very common, as in Jamaica, where it is infrequent, points to a relationship between abscess and the filaria. This view is strengthened by the fact that fragments of an adult Filaria bancrofti have been found in a few instances in abscesses by Manson-Bahr and others. Dr. Grace's data suggest also that the beta-hemolytic streptococcus is of importance in the great majority of such abscesses. Perhaps the presence of the filaria in the tissues lowers local resistance to infection and prepares the way for the streptococcus. This was the opinion of John Anderson, who studied filariasis in British Guiana in 1921 (Filariasis in British Guiana: Clinical, Pathological and Therapeutic Investigations, Research Memoir Series, London School of Tropical Medicine, vol. 5, memoir 7). We do not know accurately the geographic distribution of lymphangitis in the tropics in general. Neither do we know much about the local incidence of lymphangitis in the wider sense or of abscess. Such information is needed before sweeping correlations and comparisons can be made. Another interesting fact emphasized by Dr. Grace is that, of the three principal races in British Guiana, the East Indian has the lowest microfilarial rate and also the lowest incidence of lymphangitis and elephantiasis. That the East Indian is not less susceptible to infection with the beta-hemolytic streptococcus is shown by the fact that streptococcic abscesses are as common among them as among the Negroes, the Portuguese or the mixed elements of the population. Has the East Indian a high resistance to Filaria bancrofti?

DR. ARTHUR W. GRACE, Brooklyn: The papers in the symposium have dealt with the common dermatologic entities of the tropics which are caused by fungi, protozoa, bacteria and tiny animal parasites. In our knowledge of these diseases there are wide gaps, some of which may well be bridged by the employment of the greater and better facilities for speedy aerial transport that peace will bring. These will enable specimens of pathologic tissue in fixative, virus containing material in refrigerant and chilled bacterial cultures from most parts of the tropics to be studied in the larger centers of medical research in the temperate zones within a short period of their collection. Not all of the advances in our knowledge of cutaneous diseases in the tropics are dependent on the study of morbid material in a distant laboratory. Much valuable information can be gained by careful clinical, climatologic and epidemiologic observation on the spot. An excellent example of this type of research is found in the reports of Loewenthal on the cutaneous diseases peculiar to, prevalent among or absent from native races in East Africa. It is not always easy, however, to translate data obtained by observation of one race to another, particularly when there is a lack of exact coincidence of the cutaneous histology in the two races. Such difficulty does not arise in Australia, where there is virtually no colored element at large and where comparison is possible between the inhabitants of a city in the tropics and one populated with the same stock in the temperate zone 2,000 miles to the south. Opportunity to study the course of tropical disease, free from local complicating factors, is now being afforded in the United States. An example of this kind is filariasis, in which inguinal adenopathy and scrotal and inguinal edema are not infrequently followed, in endemic filarial countries, by elephantiasis of the lower limbs or scrotum. The precipitating cause of the elephantiasis is generally believed to be the hemolytic streptococcus normally resident on the skin in such endemic areas. The higher degree of personal hygiene exercised by the inhabitants of the United States, the use of footwear and the probable lower streptococcus population of the skin in this country should therefore render much less likely the development of elephantiasis in persons who have left the endemic zone shortly after the acquisition of inguinal and scrotal manifestations of filariasis.

DR. FRED WISE, New York: Dr. Frazier's broad experience with leprosy over a period of many years is reflected in this contribution, dealing chiefly with the epidemiology and natural history of the disease. I shall limit my discussion to the occasional difficulty of diagnosing atypical and incipient cases and the phenomena relating to tuberculoid leprosy. Within the past three years 2 patients have come under my observation in whom the diagnosis of leprosy was entertained by myself as well as by a large group of my colleagues in New York. Both patients presented cutaneous lesions which were indistinguishable from those of leprosy. Bacteriologic, histologic and neurologic investigations, however, failed to confirm and, at the same time, failed to negate the diagnosis of leprosy. In cases in which laboratory investigations result in negative findings, the most careful neurologic examinations must be done in an attempt to discover evidences of loss of sensation to heat, existence of hyperesthesia, anesthesia, deep analgesia and other disturbances of the nervous system. It should be borne in mind that diverse nerve changes may be present for months or years before the telltale cutaneous lesions

manifest themselves. Thus, some cases require protracted observation and investigation before the correct diagnosis can be determined. Such instances are fortunately uncommon in this country. Dr. Frazier aptly said that "The most typical tubercles of the skin are encountered not in tuberculosis but in leprosy." If the diagnosis of certain forms of eruption should be based wholly on the histologic structure of a single lesion which happened to be of tuberculoid character, it can be readily seen that the unskilled physician's interpretation would lead to grave difficulties. Many years ago, Josef Jadassohn of Breslau established the fact that in certain cases macular lesions devoid of specific histologic structure would later undergo a transformation to a definite tuberculoid architecture. Comprehensive studies of this phenomenon have been published by Wade, Pineda, Saenz and Palomino in recent years. Wade demonstrated tuberculoid alterations also in nerves, testes and lymph nodes. Many lesions of this character, when they occur on the skin, cannot be distinguished from sarcoid; and, as in cutaneous tuberculids, bacilli are either quite scarce, or none can be detected in the tissues. The immunobiologic phenomena pertaining to infection with Microbacterium leprae are analogous to those of infection with tuberculosis, in accord with the Jadassohn-Lewandowsky law. A specific skin sensitization to the respective micro-organisms occurs in both diseases.

GASTROINTESTINAL DISTURBANCES IN THE COMBAT AREA

II. PRELIMINARY OBSERVATIONS ON FUNCTIONAL DISORDERS OF THE DIGESTIVE TRACT

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During a twelve month period beginning March 28, 1942 200 patients were admitted to a large hospital in the South Pacific because of "dyspepsia." Fifty-three per cent of these patients presented symptoms that were subsequently judged to be due to functional disturbances of the digestive tract. Though no organic basis for their distress could be demonstrated, these patients were found to be no less disabled than those suffering from peptic ulcer. Functional disorders constitute a major problem wherever there are large bodies of troops in the field. It is therefore considered important to record our experiences in the observation, treatment and disposition of these patients.

DEFINITION AND TYPES

Under the heading of functional gastrointestinal disease are included all those conditions in which the predominating symptoms are due to a disturbed function of the digestive tract but in which no positive objective evidence of organic disease can be demonstrated. This large group of functional disorders is subdivided into four general types based on the outstanding symptoms. Thus those patients who presented the typical syndrome of transient abdominal cramps coming on after eating and made worse by the taking of certain coarse foods are considered as belonging to a subgroup whose symptoms were due to an irritable or spastic colon. This subgroup comprises 80 per cent of the patients with functional disturbances. The next largest subgroup, which accounts for 10 per cent of the total number of patients with functional disturbances, includes those whose predominating symptoms were nausea and vomiting. There is a third subgroup with symptoms similar to those of peptic ulcer who comprise 7 per cent. Finally there is a subgroup, 2 per cent of the total, which represents those suffering from symptoms of aerophagia.

PROBLEMS OF DIAGNOSIS

In civilian practice the diagnosis of a functional disorder at best is fraught with many hazards. In military practice these hazards are intensified not only because of the characteristic lack of positive objective findings but because of a conscious or an unconscious desire on the part of many soldiers to escape from an unpleasant or dangerous situation. For therapeutic as well as diagnostic reasons every effort was made to rule out organic lesions. Since a gastroscopic examination was not possible, the percentage figure for patients with functional disorders may include some whose primary digestive disturbances could have been secondary to chronic gastritis.

CLINICAL HISTORY

In general, a careful history, as in all cases of disease of the digestive tract, proved to be of paramount importance in reaching a correct diagnosis of functional disorders. All of the patients were found to be in a state of either acute or chronic emotional ferment. This characteristic emotional unrest was frequently found to spring from intense feelings of resentment toward a temporary local situation or from persistent feelings of anxiety or fear. These feelings often were present beneath an outward appearance of calm. When specific symptoms were considered, every sort of combination was encountered. Except in 2 per cent of patients presenting the ulcer syndrome, the most striking characteristic of functional disturbances was the food-pain relationship. This contrasted sharply with the usual pain-food-ease picture that typified ulcer in the absence of obstruction. The patient with functional disturbances complained that cramplike pains occurred shortly after meals but that they disappeared spontaneously within an hour or so or were promptly relieved by vomiting or a bowel movement. The patients with ulcer, on the other hand, commonly experienced a more or less steady pain which came on before meals and was relieved promptly by the taking of food. While this history of a food-pain relationship was helpful as a clue, it was by no means pathognomonic.

EXAMINATIONS

Physical Examination.—The findings on physical examination were seldom striking. A tender and palpable sigmoid colon was encountered in approximately one third of these patients. There were no other physical findings that appeared to be at all characteristic of functional disease of the gastrointestinal tract.

Examination of Stools.—With regard to color, consistency and frequency, the stools presented little that could be called diagnostic. Particular attention was paid for a time to the presence of mucus, which was found in the stools of 25 per cent of these patients. This compares with 23 per cent in patients with peptic ulcer, indicating that the presence of mucus in the stools is of little importance in the differential diagnosis.

X-Ray Examination.—An x-ray examination of the upper gastrointestinal tract was made in 80 per cent of our patients considered to have functional disorders. Only in 2 patients, who were chronic air swallowers, were any findings of note demonstrated by x-ray. No significant abnormalities in emptying times were observed. Barium sulfate enemas were performed in but a small number of instances and revealed nothing remarkable. This high percentage of x-ray examinations with negative results might seem at first glance to indicate a tremendous waste of time and talent. How-

ever, in the group with functional disorders x-ray examination has proved to be of value in ruling out more serious organic lesions and to have some therapeutic advantage from a psychologic point of view.

ARMY GENERAL CLASSIFICATION TESTS

The army general classification tests are designed to classify all soldiers in terms of their ability to learn their duties in the service. They are a measure of the general level of a man's abilities rather than his ability in a special field. Arrivals at recruiting centers who are able to read and write English are sorted by means of the general classification tests into five broad classes with respect to their ability to learn the duties of a soldier.[1] The following five classes have been called army grades:

Army Grade I. Very rapid learners, about 7 per cent of the men in the Army.
Army Grade II. Rapid learners, about 24 per cent.
Army Grade III. Average learners, about 38 per cent.
Army Grade IV. Slow learners, about 24 per cent.
Army Grade V. Very slow learners, about 7 per cent.

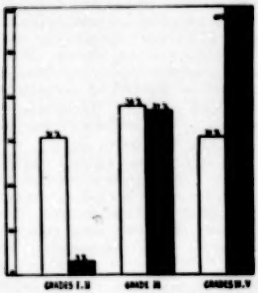

Chart 1.—Soldiers with functional digestive disease.

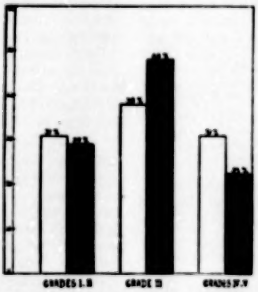

Chart 2.—Soldiers with peptic ulcer.

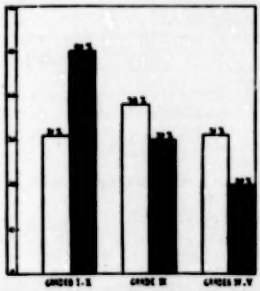

Chart 3.—Highly trained enlisted medical men.

Distribution of patients with functional gastrointestinal disturbances (chart 1) and patients with ulcer (chart 2) compared with highly trained enlisted medical men (chart 3), in the army general classification grades. In each chart a comparison is made between the normally anticipated distribution (white columns) and the distribution obtained for the subjects under consideration (black columns).

Those who make high scores are usually those who do best in the various army training courses and excel in their daily duties in the service. Those who make low scores are inclined to be less alert and are likely to encounter difficulty in adapting themselves to new situations.

Comparison of Army General Classification Scores

Percentage in Each Grade in Health and Disease

	Anticipated	713,000 Selectees	Hospital Personnel	Ulcer	Functional Disease
Group I	7	8	7	0	0
Group II	24	29	43	29	3
Group III	38	30	39	48	37
Group IV	24	21	11	23	32
Group V	7	12	7	0	28

The army grades on the general classification tests were computed in percentage for our patients with ulcer and the patients with functional disorders of the digestive tract. The charts graphically illustrate the findings, while the table gives a breakdown of the percentage in each grade for four different groups of soldiers compared with the anticipated figures. The greater number of patients with functional digestive disturbances are found in grades IV and V, while the occurrence of purely functional disorders in grades I and II is extremely rare. These findings bear out in a most striking manner the clinical impression that digestive disturbances of the functional type are seldom seen among bright, alert, well integrated persons. Conversely, functional disorders of the digestive tract are more commonly seen in poorly integrated persons who have difficulty in learning and in adapting themselves to the conditions of the service. Thus from a medical point of view the selectee who on the basis of his army general classification test gives indication of being a poor risk has been so proved while under the stress and strain of field conditions in the combat area.

RESPONSE TO THERAPY

On dietary measures and the limited use of antispasmodic drugs 58 per cent of the patients with functional disorders showed no improvement. Of those who showed good improvement 90 per cent had experienced symptoms for no longer than twelve months. A nonlaxative, low residue diet was uniformly prescribed. During the first two months tincture of belladonna 15 minims (1 cc.) and phenobarbital 0.032 Gm. four times a day were employed. The results were not impressive. A period followed during which these drugs were not available. While no detailed record was kept, the clinical impression was gained that the lack of these drugs made very little difference in the course of the symptoms. Recently these drugs were reinstituted in treatment in accordance with the suggestions of a psychiatrist, Major John M. Cotton, M. C. Belladonna was administered in gradually increased doses to the limit of tolerance. Fifteen minims of the tincture four times a day twenty minutes before meals and at bedtime served as the initial dosage. This was raised to 16 minims on the second day, and on each subsequent day a single drop was added to each dose until relief or toxic symptoms such as blurred vision, tachycardia or excessive drying of the mouth occurred. It is too early to make any positive statements as to the value of this regimen but it can be said that the early results have been promising in overcoming the acute attacks of postprandial abdominal cramps.

1. Personal Classification Tests, War Department, Technical Manual 12-260, Washington, D. C., Government Printing Office, 1942.

DISPOSITION

The disposition of patients suffering from functional digestive disturbances in the field is a problem. These patients as far as physical and laboratory findings reveal have no organic lesions. In this respect they appear as healthy as the next soldier. Nevertheless they experience definite symptoms that in many instances seriously interfere with the satisfactory performance of their duties. Their ills, appearances to the contrary notwithstanding, are not imaginary but real. An opinion as to this type of patient's fitness for duty based on purely objective findings is obviously unsatisfactory. For this reason, whenever possible, further information as to the patient's military qualifications under simulated or actual combat conditions were sought from commanding officers and battalion surgeons. Information obtained in this manner was frequently found to be of inestimable value to us in reaching a decision as to the proper disposition of the soldier.

In this connection three possible courses presented themselves: (1) return to duty, (2) transfer to a labor battalion or (3) transfer to a general hospital in the zone of the interior for reclassification. After careful hospital study and education it was found possible to return to duty 88 per cent of those patients who had been admitted for the first time in contrast to 56 per cent of those with more than one such admission. The patients whom we thus returned to duty frequently were accompanied by a letter to the commanding officer explaining the findings and the nature of the disease. It was suggested that if the soldier failed to adapt himself satisfactorily and if his symptoms persisted with sufficient intensity to interfere with his efficiency he be returned to the hospital with information concerning his general fitness as a soldier.

It was learned that to keep such a soldier in his unit was detrimental to the morale of his outfit and not in the best interests of the service. An illustrative incident was reported to us of a soldier who eventually entered active combat although suffering from a functional disturbance. Under the tremendous emotional strain of being under fire his hitherto relatively mild symptoms became acute and he collapsed in a foxhole, being unable to proceed farther. He was found by two litter bearers and was placed on a stretcher. While he was being transported to a field dressing station one of the litter bearers was killed and the other seriously wounded. This seems an inordinately heavy price to pay for the health of a soldier who previously had given definite evidence of emotional instability sufficient to render him unfit for combat duty. This incident not only cost the life of a valuable litter bearer but may have prevented the evacuation of a wounded soldier in serious need of surgical care. Again this is but a single occurrence but it serves to illustrate the point that persons suffering from repeated attacks of a functional digestive disorder are more likely to be a liability than an asset under fire and for that reason should be placed from the beginning in a situation where their abilities have a greater chance of success.

During the early months the sending of such patients to a labor battalion or service company seemed a promising solution. This course was adopted with the hope that a little "discipline" would make "men" out of these persons. This practice we soon discovered to be disastrous. Instead of the soldier being improved, he usually was returned to the hospital with his symptoms more deeply entrenched.

Recommendation for a transfer to a general hospital in the zone of the interior was made with regard to 22 per cent of the patients suffering from functional gastrointestinal disturbances by a disposition board in our hospital. When a patient of this type was readmitted because of persistent symptoms, regardless of all therapy and all efforts of his command to place him satisfactorily, he was brought promptly before a board of medical officers. The majority of patients so presented, after a careful study of the man and the situation, were recommended for transfer to the zone of the interior as unfit for combat duty. How many more of our patients were similarly recommended by disposition boards in other hospitals it is not possible to say. Our figure is lower than that for soldiers who obtained certificates of disability discharge from the Lawson General Hospital as reported by Chamberlin.[2] It is not clear just how to account for this disparity other than that patients admitted to army general hospitals are selected in that they have been referred from other units because of serious physical defects. In contrast, the forward hospitals draw their patients directly from the troops in the field.

CONCLUSIONS

1. Patients with functional disorders of the gastrointestinal tract constitute 53 per cent of the group admitted to a large hospital in the forward area because of dyspepsia.

2. The characteristic complaint of these patients is distress induced by the taking of food.

3. The scores of the army general classification tests give striking confirmation to the clinical impression that the majority of these patients are incapable of adapting themselves to field service and are poor risks in the combat area.

4. For the most part the response of these patients to therapeutic measures in the field is transient and poor.

5. Patients who are shown to be poor learners and who persistently fail to make any satisfactory improvement should be returned promptly to the zone of the interior for reclassification.

2. Chamberlin, Donald T.: Peptic Ulcer and Irritable Colon in the Army, Am. J. Digest. Dis. 9:245-248 (Aug.) 1942.

Surgical Conquest of Goiter.—The surgical conquest of goiter is due in large degree to Theodore Kocher, who in 1872, at the age of 31, became director of the surgical clinic at Bern, Switzerland. The high incidence of goiter at Bern gave him an unusual opportunity to study the disease. Lister's methods had just been adopted by Kocher's Swiss, German and Austrian colleagues, and the specter of infection in operative wounds banished. Kocher, who was a master technician as well as a keen thinker, devised new methods for obtaining satisfactory surgical exposure of the thyroid, for controlling hemorrhage and for avoiding damage to the nerves of the larynx. In 1883 he reported his first ten years' work, a total of 101 goiter extirpations, with a mortality of 12.8 per cent. In this famous paper he not only described the essential features of the modern technic for removing thyroid adenomas but he identified a new clinical condition which he called cachexia strumipriva. All but two of a series of 18 patients in whom he had removed the entire thyroid developed a syndrome characterized by lethargy, puffiness of the face and dryness of the skin. Kocher rightly concluded that this was due to a lack of thyroid secretion.—Haagensen, C. D., and Lloyd, Wyndham E. B.: A Hundred Years of Medicine, New York, Sheridan House, Inc., 1943.

Clinical Notes, Suggestions and New Instruments

BICORNATE UTERUS WITH PREGNANCY IN EACH HORN

Major Alexander Braze, Medical Corps
Army of the United States

During the embryologic development of the female the two mullerian ducts fuse from below upward to form the vaginal tract and the uterus. The numerous anomalies of the female genital system that have been reported in the literature can be ascribed in the great majority of cases to lack of fusion at any location throughout the extent of the two canals and in the remainder to the rudimentary development of one duct.

In various animals the mullerian ducts normally do not fuse and consequently two tubular uteri are present. In the human being, in the event of incomplete development of one duct, the rudimentary side appears as an appendage to an apparently normal uterus. Since Mauriceau and Vassal reported the first case in 1669, over 100 cases of varying degree and extent have been described in the literature.

Usually menstruation occurs from the two uteri simultaneously; however, it may come from one horn at a time. Pregnancy may occur in one or both horns. Muller has recorded cases of menstruation from the empty horn during the pregnancy. In one instance twins were found in one horn. It is conceivable that, should each horn contain an ovum, superfetation might occur. Several such cases have been reported in the literature.

In the ordinary course of events, pregnancy in one horn is undisturbed, the uninvolved or nonpregnant horn growing and forming a decidual membrane typical of that found in an ectopic pregnancy. In some cases this decidua may be expelled without disturbing the pregnancy of the other horn. In other instances the course will resemble that of an abortion for which the usual treatment is instituted. Being forewarned as to the presence of an anomalous development of the uterine tract, the surgeon proceeds with extreme caution during the curettage.

Fig. 1.—Flat posteroanterior film of the abdomen during first stage of labor.

The sparsity of reports which have been recorded indicate that it is unusual for gestation in a bicornate uterus to continue uneventfully to term. Should this occur, the following complications are quite frequently encountered:

1. Weak pains may occur associated with atony in the third stage with resultant postpartum hemorrhage.

2. Dystocia may be produced by prolapse of the nonpregnant horn under the other with incarceration in the pelvis or by the nonpregnant cervix being forced downward to the vulva with the head.

A review of the literature has revealed a definite lack of adequate reports on pregnancies in each horn of a bilateral uterus and in no instance successful termination of such pregnancy with viable children.

In 1925 Rowlett [1] of Florida described a case of a double uterus with pregnancy of each horn. The condition had been discovered during a laparotomy two years previously. Despite this knowledge the patient went into labor after five months' gestation miscarrying male fetuses weighing 3 pounds 4 ounces (1,420 Gm.) and 2 pounds 3 ounces (990 Gm.). The question of superfetation was raised.

In 1933 Wong [2] of the Peiping Union Medical College in Peiping, China, reported in considerable detail a pregnancy in one horn of a double uterus. At six months there occurred all the signs and symptoms of a miscarriage ending in expulsion of a decidual cast of the nonpregnant horn. Convalescence was uneventful, and three and one-half months later the patient was delivered of a normal girl baby. The puerperium progressed normally. A special examination forty days post partum attempted to prove by hysterosalpingographic studies the presence of a bicornate uterus. After repeated attempts Wong and his associates were able to demonstrate only the right uterine cavity and its tube. One week later the test was repeated and both cavities were demonstrated. There was only one cervical canal, and the opening into the left uterine cavity was just within the external os and so was passed by the cannula on previous tests.

Fig. 2.—Appearance after intrauterine injection of iodized oil six weeks post partum.

In 1934 Barrett [3] of the Vanderbilt University Hospital in Tennessee reported a bicornate uterus with a pregnancy in each horn. Both infants were born prematurely and died shortly after delivery. The patient had had six previous pregnancies, of which three aborted and two miscarried (one of twins). One pregnancy went to term, producing a girl who was 5 years old at the time of the reported pregnancy.

In 1939 Johnston [4] of Akron, Ohio, reported a case with a dead fetus in one cornu and a normal pregnancy in the other. The condition was discovered during a laparotomy in which the cornu with the dead fetus was mistaken for a fibroma and removed. The remaining pregnancy continued uneventfully to term, and the delivery of a full term normal infant was accomplished with low forceps.

1. Rowlett, W. M.: Report of Case of Double Uterus with Pregnancy of Each, J. Florida M. A. **12**: 5 (July) 1925.
2. Wong, Amos, I. H.: Pregnancy in a Double Uterus, Chinese M. J. **47**: 61-65, 1933.
3. Barrett, Arthur B.: Bicornate Uterus with Pregnancy in Each Horn, Am. J. Obst. & Gynec. **28**: 612 (Oct.) 1934.
4. Johnston, W. M.: Bicornate Uterus, Am. J. Surg. **44**: 662 (June) 1939.

The case which I present is of particular interest since it represents the only recorded case in the literature of pregnancy in each horn of a bicornate uterus which proceeded uneventfully to term with consequent delivery of two normal viable children.

REPORT OF CASE

On Jan. 20, 1941 at 8 a. m. Dr. J. S. Lundholm referred to me Mrs. R. T., white, aged 24, who was in active labor. Her menstrual history was normal (last menstrual period April 8, 1940) although her menses had been extremely profuse. One year previously she had had a delivery in the home. The membranes had ruptured spontaneously prior to the onset of labor, which continued with severe dystocia for twelve days, resulting in the delivery of a female child which lived for only a few hours. The dystocia was undoubtedly produced by the incarceration in the pelvis of the nonpregnant horn.

Examination revealed an extremely broad abdomen containing two sets of fetal heart tones, 140 per minute on the right and 135 on the left. Both fetal heads were palpable and the diagnosis of twins was readily made. There appeared to be a depression between the two fetuses, a fact which aroused a suspicion of the presence of a bicornate uterus. Inspection of the introitus revealed a third degree cystocele and rectocele. According to the roentgenologist's report, a flat posteroanterior film of the abdomen showed the presence of twins. The two fetal heads were floating above the pelvic inlet. Both heads

Fig. 3.—Posterior view of surgical specimen.

were presenting, one on each side of the pelvis. The fetal spines were directed laterally and the small parts were directed toward the maternal spine. There were no developmental anomalies of the fetuses or of the maternal pelvis. Both of the fetal heads appeared to be attempting to enter the pelvis. There was evidence of pressure on both heads, which is not unusual during labor, but the pressure on one of the heads appeared to be due to the other head pushing against it (fig. 1).

At 10 a. m. there occurred a relatively simple spontaneous delivery of a viable 5 pound 12½ ounce (2,620 Gm.) boy. The placenta was delivered intact at 10:12 a. m. from the right horn, but, despite firm contraction of this horn, profuse hemorrhage continued. At 10:19 a m., a living 6 pound 9 ounce (2,860 Gm.) girl was delivered by manual pressure over the left fundus and its placenta followed intact at 10:25 a. m. The left horn remained atonic but with continued gentle massage and the administration of pitocin and ergotamine tartrate (gynergen) eventually contracted nicely. Two firm masses were palpable in the suprapubic region. There were no lacerations. Profuse hemorrhage again occurred at 1 p. m. but responded well to treatment.

The blood count of the mother revealed a hypochromic anemia of pregnancy (hemoglobin 38 per cent and red blood corpuscles 2,910,000). She was given a transfusion of 550 cc. of whole citrated blood. The puerperium was otherwise uneventful.

On the seventh postpartum day a vaginal examination was performed under aseptic technic. Specular examination revealed a single cervix and no vaginal septum. The third degree cystocele and rectocele were of course still present. On bimanual examination there were apparent two widely separated uterine bodies with no definite palpable point of fusion.

Hysterosalpingographic studies were undertaken on March 6, 1941, approximately six weeks post partum. Fifteen cc. of iodized poppyseed oil was injected through the cannula, which was inserted so that the tip rested just within the external

Fig. 4.—Anterior view of surgical specimen.

cervical os. The roentgenologist reported that a flat film of the pelvis made after an intrauterine injection of iodized oil showed a bicornate type of uterus filled with a radiopaque material. The cannula extended into the right uterine horn for a distance of 1.5 cm. The horns of the uterus were about 3 inches in length. This increase in the size of the uterus was probably due to subinvolution. The fallopian tubes contained some radiopaque material but were not abnormal (fig. 2).

Fig. 5.—Sagittal section of surgical specimen.

The mother and twins were dismissed from the hospital in excellent physical condition in two weeks. The twins are still alive at the time this paper is being written and are progressing normally.

Approximately three months following her dismissal from the hospital, the patient was readmitted with severe lower

abdominal cramping. Pelvic examination revealed a firm tender mass in the left fornix which could not be displaced upward. A diagnosis was made of prolapse of the left horn of the uterus with incarceration in the pelvis. Since the patient had two healthy children and her financial status did not warrant prolonged conservative treatment, surgery was instituted after a preliminary blood transfusion. An anterior and posterior colporrhaphy was first performed to repair the pelvic floor and then the abdomen was opened by means of a midline suprapubic incision. The incarcerated fundus was relieved with some difficulty. The uterus then presented itself as two widely divergent horns each with its own tube and ovary and with no visible site of fusion. The body of the uterus was then removed in toto, the process revealing the site of fusion to be just above the internal cervical os. The pathologist reported that the specimen was a uterus weighing 85 Gm. The uterus had two bodies and one cervix. The bodies were entirely separate except at the point of union with the cervix. They were cylindric and measured 3.5 and 3.0 cm. in diameter. The uterine canals were not enlarged and were lined with velvety smooth pink endometrium. The muscle walls averaged about 1.5 cm. in thickness. The cervix presented no important changes. In order to save the specimen, no sections were made. They were considered unnecessary. The diagnosis was uterus bicornis unicollis (figs. 3, 4 and 5).

The patient made an uneventful recovery and has had no further difficulty.

THE USE OF BIO-DYNE OINTMENT FOR BURNS

JOHN WINSLOW HIRSHFELD, M.D.; MATTHEW A. PILLING, M.D., AND MARK E. MAUN, M.D., DETROIT

Bio-Dyne ointment has been publicly advocated for the treatment of burns.[1] In recent articles in the lay press it has been claimed that burns so treated heal painlessly and with remarkable rapidity. It has been stated that the ointment contains substances which stimulate epithelial proliferation. These public claims have resulted in inquiries by many patients and often in the demand that Bio-Dyne be used by physicians. If Bio-Dyne ointment has these properties, it represents a truly remarkable advance in burn treatment. Since, however, we were unable to find in the medical literature any experimental or clinical support for these claims, we decided to study the effect of Bio-Dyne ointment on fresh wounds of experimental animals and man.

In order to test the epithelial growth stimulating effect of Bio-Dyne as compared with petrolatum, these ointments were applied to fresh wounds made by removing the epidermis with the Padgett dermatome. These wounds of uniform depth must reepithelize themselves primarily from the epithelium of hair follicles and the sebaceous and sweat glands of the dermis. They are ideal for testing a substance designed to stimulate epithelial growth. Two such wounds were made on each of 8 dogs, on 8 domestic pigs, and during the course of skin grafts on several human beings. Hence it was possible to treat a control wound with petrolatum impregnated gauze and the other wound with Bio-Dyne ointment. Specimens were removed for microscopic examination before application and at intervals after the application of Bio-Dyne ointment or petrolatum. Each time the dressing was disturbed for removal of a specimen a fresh supply of Bio-Dyne ointment or petrolatum was put on the wound. The specimens were fixed in solution of formaldehyde and stained with hematoxylin and eosin. Specimens were taken from dogs and pigs at intervals from 6 to 192 hours. We were able to persuade only 2 patients to submit to excision of tissue for examination, and therefore human material is limited to 2 microscopic observations, one at 4 and one at 5 days. However, the clinical course of several additional patients could be observed.

Examination of the wounds of man and animals revealed no evidence that Bio-Dyne accelerated the healing process. The wounds treated with Bio-Dyne and those treated with petrolatum gauze healed in the same time. The dressings were more painful in the wounds treated with Bio-Dyne because the Bio-Dyne ointment seemed to dry or to be absorbed, leaving the gauze dry, stiff and adherent to the wound. The gauze impregnated with petrolatum remained greasy and was easily removed.

Examination of the prepared slides confirmed the clinical impression that Bio-Dyne failed to promote epithelization more rapidly than petrolatum gauze. In view of the lack of evidence that Bio-Dyne accelerates epithelial growth, we are not convinced that Bio-Dyne ointment has any advantages over petrolatum gauze for the treatment of burns.

From the Department of Surgery and the Surgical Service of Receiving Hospital, and the Department of Pathology of Wayne University College of Medicine.

1. New York Herald Tribune, July 18, 1943. Time Magazine 40:94 (Oct. 5) 1942. Reader's Digest 42:75 (Jan.) 1943.

Special Article

THE ABATEMENT OF NOISE

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It is a commonplace fact that the nation's present circumstances of living and working have greatly multiplied both the quantity and the continuity of noise. At the same time justification for noise seems better established so that indignation, however warranted, meets some disfavor. If the period of national stress may so accentuate the ill effects of noise that a disturbed people will demand and secure relief both for the duration of the conflict and thereafter, at least one constructive end will have been attained.

When expanded industrial plants operate on three shifts instead of the customary one day-shift, their contribution to the noise and the ill effects of noise throughout the community may be enormously increased. Automobile traffic may be as heavy at midnight as at 5 in the afternoon. Increased numbers of streetcars, replacing unfueled automobiles and operating continuously, may make both days and nights unendurable. Recreation through noisy sports at 2 o'clock in the morning may seem reasonable to those workers whose tasks were completed at midnight, but not so for those other workers then seeking sleep, with duties beginning at 7. In turn, each group disturbs some other. Organized night trucking, planned to avoid daylight road congestion, perpetuates the din of the day throughout the night.

The acceptance of noise as an inescapable necessity possibly reflects unintelligent complacency. A proper understanding of the established ill effects of noise and the practicability of noise control would appear to warrant sponsorship of noise abatement as a fecund war measure. The purpose of this report is to assert that much current noise is needless; that effort against noise is a widely neglected but legitimate portion of over-all warfare; that methods of noise control are practical and no longer technically mysterious; and that behind some of the more publicized evils of the day, such as wilful absenteeism, may be found the insidious disturbances from noise.

This publication represents a report of the American Medical Association's Committee to Study Air Conditioning, consisting of Dr. Carey P. McCord, Detroit, chairman; Dr. Walter M. Simpson, Dayton, Ohio; Prof. Constantin P. Yaglou, Boston, and Dr. Abram L. Barach, New York, together with Mr. John D. Goodell, Detroit, as a temporary member.

A PREFATORY STATEMENT OF NOISE ABATEMENT PRINCIPLES

Every successful suppression of noise results from the application of one or more of a large number of somewhat unrelated principles. None may be described in detail, but some of the fundamental laws are explained sufficiently to provide background for the specific examples in the tabulation which follows and the suggestions appearing in various sections of this report.

Fundamentals.—1. Frequencies which produce auditory impressions are propagated by means of pressure waves. When a vibrating body strikes a series of rapid physical blows against the air, wood, metal or whatever substance with which it comes in contact, this impact is either cushioned or transmitted in direct proportion to the mass per unit of volume of the material which receives the blow.

2. Just as an electrical circuit presents an impedance to the flow of current, so the cross section of an acoustic conductor presents an impedance to sound energy. The most efficient transfer of energy between two mediums occurs when the impedances are matched.

3. Every object which can be set into vibration so as to generate audible energy has a natural period of oscillation. This means that if it is stroked, struck or plucked it will always generate a sound wave containing the same fundamental frequency.

4. When a sound wave is generated in the open air, it continues to travel until the energy is dissipated. When a sound wave is generated within a room, it is reflected from the walls, ceiling, floor and furnishings, the energy finally being dissipated during countless journeys between reflecting surfaces. A human being in the room receives an auditory impression of the sound on each reflected journey past his ear. The intelligence is conveyed by the original impulse; the rest is a confusing jumble. Listening to speech under reverberant conditions is like trying to watch motion pictures in a room constructed entirely of mirrors.

Related to reverberation, but not identical, is the "focusing effect" of certain structures. By focusing effect is meant the tendency for large amounts of reflected sound to arrive at the listening point from directions other than that of the source in such a manner that reenforcement takes place.

Acoustic treatment of ceilings and walls has relatively little value in reducing low frequency reverberation.

We have conducted a series of experiments in connection with the elimination of noise, particularly with respect to low frequencies. If two sound waves of equal intensity and frequency coincide in such a manner that the compressions of one correspond to the rarefactions of the other, they are said to be in opposite phase and the result approaches silence. This curious effect where two sounds are subtractive may be used to advantage in noise reduction.

The experiment performed is presented graphically in the accompanying illustration. The sound source in the center radiates a wave of specific low frequency. The highly directional microphone (B) is placed a short distance away facing the sound source. The output from the microphone is fed through an amplifier to the four loudspeakers, which are housed in directional baffles faced away from the sound source. The amplifier is designed with electrical filters to eliminate all frequencies except those which the system is designed to cancel. The elements of the system are so arranged that the sound wave from the speakers occurs 180

Tabulated Principles and Examples of Their Application

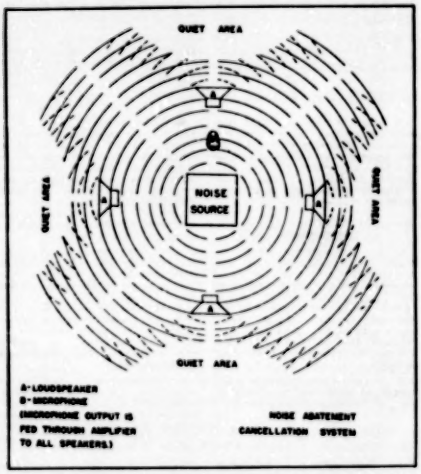
PRINCIPLE	APPLICATION
1. When a physically small object, such as a piano string, is set into vibration, it presents a relatively tiny surface to the air. If it is in firm contact with a large acoustic conductor, such as the sounding board of a piano, the transfer of energy is more efficient and results in effective physical amplification. Acoustic isolation of small vibrating bodies from all conductors and "sounding board" surfaces is desirable in minimizing noise.	1. An example of this principle concerns the sound output of a watch resting on a tabletop. The tabletop will function as a sounding board, producing sufficient amplification to make the sound output disturbing to sleep. The same watch suspended from its chain might be almost inaudible. Another demonstration of this may be made with an ordinary dinner fork. If one holds the fork in the air and plucks the tines, the sound will be puny. The instant one touches the handle of the fork to the table, the sound is increased amazingly.
2. The deliberate mis-match of impedances for purposes of minimizing noise transmission may be applied to the construction of walls. Associated with this approach is the desirability of using non-elastic materials for constructions that may function as undesirable transmitters.	2. Walls should be built of materials with high density and mass, the impedance of which is great compared with that of air. Proper installations of insulating materials in wall suspensions and between partitions, the impedance of which differs greatly from that of the walls, are also valuable. Plywood is an example of unsatisfactory wall material because of high elasticity and low mass. Concrete may be desirable because of opposite characteristics. Certain fibrous materials may be useful in spite of their low mass and density because of their low elasticity.
3. Sound conditioning and air conditioning are closely related projects. With the elimination of the necessity for open windows to provide ventilation, it becomes possible to isolate the interior of a structure from almost all exterior noise.	3. Noise reduction is a direct result of air conditioning in public conveyances as well as in structures. An obvious example of this appears in modern streamlined trains where air conditioning has brought about greatly increased insulation against noise. This unquestionably is a factor in the decreased fatigue of passengers on these improved trains.
4. The experimental results of many investigators have shown that injury may result from bone conducted sound. Protection from injury by acoustic energy transmitted through the floor may be obtained through rubber soled shoes, insulated platforms for workers and isolation of energy sources by means of cushioning supports.	4. In this connection it is important that the isolating material be adequately loaded. In other words, it is possible to use such a large mat of rubber under a working platform that the weight it carries will only slightly compress it. In this case the rubber mat may be so springy as actually to increase the vibration energy transmitted to the worker.
5. In some cases, relatively quiet operations or devices may be substituted for those causing noise.	5. Welding may be used instead of riveting, e. g. in shipbuilding or tactical vehicle manufacture. Light signals are often a practical substitute for telephone bells and other noisy devices intended to attract attention.
6. Under certain conditions a small percentage of reverberant noise may serve as an isolating medium. In an absolutely quiet room the continuity of a worker's thought is disrupted by the overheard irrelevant intelligence in nearby conversation. In a slightly reverberant large office such sounds are blended in the general noise level, and the distraction is decreased.	6. It is not always desirable to partition large offices. When several people are working in proximity a low general noise level serves to mask the intelligibility of nearby conversation.
7. Peressuive sounds, particularly intermittent ones of high frequency, are a source of pronounced irritation. In many cases the elimination of a few such seriously annoying sounds will satisfactorily reduce the fatigue of workers.	7. In order to avoid the intermittent rattle of loose parts on machines, friction of an unoiled surface against another, regular maintenance work on machinery and the damping of unnecessarily vibrating parts are indicated.
8. Under circumstances in which the original sound wave is generated at high intensity (80 decibels or more) the prime effort should be directed toward reducing the intensity of the sound at its source.	8. Reduction of audio energy sources may be accomplished by the application of several principles mentioned elsewhere.
9. In a reverberant room the decay of a sound wave is slow, and succeeding impulses may occur while reflections of the original impulse continue. In this case a sound level is established which may greatly exceed the level which would be attained without reflection.	9. The installation of acoustic material on the walls (or elsewhere) will reduce reflection of sound waves. The increased use of carpets, wall hangings and drapes will serve this same purpose, but a larger area being required to obtain the same result.

degrees out of phase with the wave from the sound source and produces cancellation. It is believed that this method of noise elimination may be applicable to certain previously difficult problems, particularly under outdoors or nonreverberant conditions.

NOISE ABATEMENT IN INDUSTRY

It may not be shown that all industries are disturbingly noisy, but in a recent prewar publication 467 occupational pursuits out of a total of 7,000 were listed as clearly contributing undesirable noise output. This figure fails to indicate the total probable exposure, since many noise free operations are customarily carried out in proximity to noisy ones. As a rule the architecture of manufacturing plants is such as to accentuate reverberation.

Chiefly from industrial experience, it is now accepted as established that noise produces significant deafness



Subtractive effect of sound waves in opposite phase.

both on a functional and on an organic basis, that noise causes or contributes to pathologic fatigue and that noise under some circumstances lowers the work output. Less certainly established, but probable, are the indications that noise unduly contributes to absenteeism, increases work spoilage and generally hampers the worker, and especially the new worker in job adjustment. It is known that in a few trades all, or nearly all, old-time workers suffer varying degrees of deafness. It is deplorably true that heavy forge operators are so nearly universally impaired as to hearing that partial deafness is recognized as some proof of experience in the trade.

One typical noise problem, together with its remedies, is here presented as generally illustrative, but particularly illustrative of the fact that steps other than wall and ceiling treatment may be required in many situations. This example is slightly disguised for military reasons. In a certain plant engaged in the manufacture of steel balls (each weighing about three-fourths of an ounce), with a weekly output to be reckoned in millions, it became necessary to carry out visual and automatic inspection for defects and size. In the visual inspection process the balls were scooped up from sheet metal baskets and dropped onto metal tables. After inspection the balls were tossed by the score or more of inspectors into various metal containers, depending on the nature of the defect. Nearby, the size inspection was carried out by several automatic machines. In all instances the balls poured from large hoppers into smaller ones, thence traveling through chutes to sizing rolls, the various sizes falling on other metal chutes and ultimately dropping into a series of metal boxes. The total output of noise was horrendous. The area of greatest annoyance was not immediately in this workroom but in adjacent offices separated only by thin partitions.

To abate this noise to reasonable comfort proved to be comparatively simple, using easily available materials and methods that might be carried out by average plant personnel and facilities. The following steps proved adequate:

All portable sheet metal containers were changed to wood.

All table surfaces were covered with plywood.

All chutes were lined with leather.

Vibration of the metal hoppers during the refilling process was decreased by refilling when half empty. This increased the inertial mass and damped the vibration tendency.

The under side of all other sheet metal surfaces over which the steel balls traveled was damped by a thick undercoating of quick drying mineralized paste.

All piping throughout the department was insulated.

Lastly, and by this time not altogether necessary, a double wall partition was erected as a protective barrier for adjacent offices. This wall was so constructed as to be "floated" rather than being built integrally into the general structure.

Through almost endless variations, noise problems arise in industry. For most of these situations there exist little used, but no less practical and simple, remedies. It is fallacious to claim that workers become inured to noise. They may become inured on the basis of deafness, but any psychologic adjustment of noise that may appear to take place must be reacquired on a day by day basis. Heretofore, compensation for injury in industry has largely excluded such disorders as occupational diseases. Whatever merits reside in broadened compensation provisions that characterize some new laws, it must be reckoned that increased impetus will be given thereby to the better control of injurious noise in industry.

NOISE ABATEMENT THROUGH ARCHITECTURAL FEATURES

Present and prospective needs inescapably require a wider application of architectural noise prevention. Every structure designed for the housing of the activities of human beings will represent architectural imperfection in the absence of appropriate noise control features. Apart from a somewhat restricted field of noise treatment, the building trend distressingly favors more, rather than less, noise. High costs both of material and of labor make some flimsy construction of small residences almost inevitable. As street noises increase, obviously there is need for greater insulation. To accomplish noise privacy it becomes necessary to provide two structural features: (1) a design of wall structure so as to prevent the transmission of sound from exteriors and between rooms; (2) sufficient absorption within rooms that the reverberation time will not be excessive. Contrary to some popular and

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pseudo architectural concepts, these are two distinct matters requiring individual solutions.

Walls should be constructed of materials of high density and mass. Walls of this nature will function as excellent conductors of sound but, because of their extremely high impedance and low natural frequency, will be very difficult to set into vibration and hence will not become secondary noise sources. In order that a wall may transmit a sound to the air in an adjacent room, it must function not only as a conductor but as a projector or radiator. Hence, what would appear to be a fallacy in the use of highly conductive materials to provide sound insulation between rooms is actually desirable.

Many people believe that heat insulation and sound insulation entail identical solutions. This is not entirely true, although most porous materials provide good heat insulation and also have desirable sound absorptive qualities. Measurements of the insulation provided by porous materials indicate that they have relatively little value by themselves unless they are extremely thick. These materials are most effective in sound insulation when they are supported in an air space between two rigid partitions. Properly installed, they will contribute considerably to the over-all insulation provided by a wall.

MISCELLANEOUS ITEMS

Utter silence, apart from certain laboratories, motion picture studios and a few other places, is never the objective of noise abatement. Human adjustments are such that total sound absence is disturbing, and any break in the silence is then startling and at times terrifying. A low background of 20 to 30 decibels of sound is comforting rather than annoying.

In industry the satisfactory operation of many machines is determined by the ears of the operator. Conscious effort in the detection of these telltale sounds constitutes the chief complaint of many workers against ambient noise. The situation is akin to that in medicine when auscultation is made impossible or difficult by surrounding noise.

Music during work may be advantageous under some circumstances and anathematous under others. In work, every job may lead to rhythmic muscular motions —every job having its own variations. The varying tempos of music may wholly upset job rhythms, reduce production and indirectly cause accidents.

Good types of ear defenders, properly fitted, may reduce loudness of ambient noises as much as 80 per cent at certain levels without interfering with the opportunity for ordinary conversation. While the molded fitting of an ear defender is highly desirable, the taking of ear canal impressions followed by the casting of individual stopples for each ear of all individuals introduces many practical difficulties.

During exposure to injurious noise levels, the larger part of the hearing loss occurs during the first hour, with only slight elevation during subsequent periods. On the other hand, recovery time is definitely prolonged if the exposure time has been extensive. Roughly, the apparent recovery time is proportional to the square of exposure time, but cumulative effects repeatedly have been demonstrated.

While sounds that are not loud may be the source of some physiologic damage and annoyance, probably only loud sounds cause organic damage to the ear.

Older persons are more likely to incur auditory apparatus damage from noise since their hearing organs possess lower recuperative powers.

Wide variations exist in different people in sensitivity to noise. Relative tolerance to noise is an acceptable concept.

In the average factory with mechanical operations, the noise level is approximately 90 decibels, or 10,000,000,000 times the least perceptible sound and 100,000 times the sound of ordinary conversation.

Holes in walls, such as for the previous passage of pipes, permit the passage of much unwanted sound. Even a key hole may transmit sound energy sufficient to warrant suppression. Under these circumstances a constriction of the sound stream takes place so that more energy passes through than might be expected. Any open air passage of any size may be of importance in reducing the transmission of noise between rooms.

Fluctuation in noisiness is experienced unpleasantly. A continuous noise from 70 to 75 decibels is endurable; an occasional increase from 40 to 70 decibels may be much more annoying.

On a psychologic basis, much discomfort arises from noise expectation. If one shoe is dropped on the floor above and the interval pending the fall of the second shoe is excessive, the tension produced by the observer's expectancy constitutes a minor example of this type of disturbance.

High frequency sounds produce greater acoustic trauma than those of low frequency, but in the long run low frequency sounds may offer greater problems because they are less easily abated. It is pointed out that trauma which is actually caused by an abrupt change in barometric pressure may be mistakenly attributed to the low frequency sound, e. g. in drop forge operations where a large hammer displaces a considerable cubic quantity of air so suddenly as to create a destructive pulse of increased barometric pressure.

In the operation of large guns, it has been shown that the effects of shock and deafness result from the primary pulse of air pressure rather than from the sound modulation of the air. The effects are closely related to the duration of the compression pulse, which is usually much shorter than the rarefaction. In comparative tests made with rifles and mortars it was found that the compression pulse from the mortar was of much higher pressure but that the maleffects were minor because of the relatively short duration of the explosion pulse from the mortar.

It is believed that, where explosive shells are intended to produce shock in personnel not subjected to direct hits, the fact that extreme explosive pressures of short duration often do not produce serious trauma while relatively low pressures of longer duration have great effect should be an important designing consideration.

Ear defenders are valuable in protecting the ear from dangerous noises associated with gun fire but may not provide protection against explosion shock.

LEGISLATIVE ASPECTS OF NOISE ABATEMENT AND NOISE PREVENTION

The control of noise by municipal or higher authority never has been wholly effective. Effectivity will never be attained until that time when both the public and

responsible officials have acquired better concepts of the significance of noise and the measures through which noise may be eliminated or reduced to inoffensive levels. The vague outlawing of the barking of dogs or the shrieking of newsboys becomes unimpressive in the face of tolerated streetcar systems that may be a thousand times more annoying, or the licensing for operation of loud speakers on trucks which rove the streets day and night shouting the dubious values of possibly questionable products or causes. Legal measures as commonly written are frequently so loosely phrased as to permit numerous interpretations and hamper enforcement. Customarily, only on complaint of disturbed citizens is consideration given to obviously disturbing noises.

Education of the public as a whole and in special groups along with necessary legislation appears to be the key to noise amelioration. Many law abiding citizens who under no circumstances would contemplate the sending up of a rocket flare on a public street or turning a flood light on an apartment house to attract the attention of a friend will unhesitatingly blanket a house and an entire block with resounding noise from a badly designed automobile horn. It seems necessary to carry out educative programs as a supplement to legislative acts for the general public, for the makers or purveyors of noisy devices, and particularly for architects and builders of various structures such as homes, hotels, office buildings and streetways.

In a previous sentence the term "badly designed" was deliberately used. In the design of automobile horns there appears to have been overlooked the fact that many accidents are unnecessarily caused by fright or confusion from the alarming intensity of the automobile horn. In recent years some horns have been redesigned to play a tune, which unduly prolongs the sound.

It is possible so to train a dog that on hearing a specific sound he will immediately wag his tail or lift a foot or perform some other reflex indication of awareness. It should not be more difficult to educate the public to respond to simple, nonirritating sounds as a warning of vehicular danger. It is obvious that a human being educated to the dangerous significance of a specific sound will react to protect himself more intelligently and more expeditely than in the midst of fright from nearby shrieking noises. It is understood that the Sparks-Withington Company has studied this problem with a view toward designing an improved automobile horn.

Designers of modern railroad locomotives have demonstrated the advantages of the mellow horn now used on diesel locomotives over the shrill steam whistle. It is actually easier to locate the direction of approach from this low pitched tone, and the countryside and cityside are spared the affront that formerly echoed from all directions.

Most legislation has failed to include provisions in building standards for protection against noise. In some measure sound abating materials are relatively cheap, but failure to specify their use or the method of application has made many buildings hideous as to abode or work because of noise disturbances. The monetary value of acoustic insulation from street noises is well recognized in some hotels where it is found that the public will pay increased rates for rooms on higher floors or for spaces that have been properly treated acoustically.

The continued use of noisy streetcars lends affront no longer to be tolerated as a necessary evil, except under the immediate conditions imposed by war. In many cities, busses or other streetcar substitutes have measurably reduced this annoyance. Distinct advantages are to be found in the "PCC car," a quiet type of streetcar developed several years ago, the construction of which is open to all car builders throughout the country. It is believed that PCC car construction has been hampered sharply by war circumstances, although large numbers are already in use in many sections of the country. It is noteworthy that in the presence of a quiet streetcar the noise of the trolley wheel, previously unnoticed, becomes annoying, and in some instances led to the substitution of trolley shoes. This is a good example of the oft encountered experience that with the elimination of a principal noise there rise other irritating noises previously masked.

At this time a number of cities, large and small, under the aegis of the National Noise Abatement Council or otherwise are carrying out noise control programs. The patterns of these programs are similar, emphasizing publicity and education. In some instances achievements are sought on an intercity competitive basis. In addition to immediate accomplishments such campaigns will contribute to the groundwork required for more directly constructive measures.

Noise curbing activities in New York City may be referred to as an outstanding rather than representative example. In that city in one recent year 225,143 persons were issued warnings under the provisions of the Noise Abatement Code and 32,282 others were given court summons. Some of the bans included in the New York provisions are:

To sound any horn or signal device on any automobile, motorcycle, bus, streetcar or other vehicle while stationary, except as a danger signal when an approaching vehicle is apparently out of control; or, if in motion, only as a danger signal after or as brakes are being applied.

To blow any steam whistle except to give notice of time to begin or stop work, or as a warning signal.

To operate any radio, phonograph or any musical instrument in such a manner or with such volume as to annoy or disturb the quiet, comfort or repose of persons in any dwelling, hotel or other type of residence.

To erect, demolish or alter or repair any building other than between the hours of 7 a. m. and 6 p. m., except in case of urgent necessity.

To use mechanical loud speakers or amplifiers on trucks, etc.

Measures of this character may be found in many cities, but it is not believed that equal activity in enforcement always prevails. The need for these curbing procedures is most clearly indicated during wartime, but they should be considered as long range projects.

EPITOME

Patient endurance of excessive and perpetuated man made noises is no longer a virtue. Injury, measurable and immeasurable, from noise such as now widely attends human life is real and not a matter for speculation. Relief from noise is procurable.

10 Peterboro Street.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

Anti-Trichomonas Vaginitis Agents

THE COUNCIL ON PHARMACY AND CHEMISTRY FREQUENTLY GIVES CONSIDERATION TO CLAIMS ADVANCED ON BEHALF OF PRODUCTS PROPOSED FOR THE TREATMENT OF TRICHOMONAS VAGINITIS. BECAUSE OF MUCH CONFUSION WHICH EXISTS ON THIS PROBLEM THE COUNCIL DECIDED THAT A STATUS REPORT SHOULD BE PREPARED. SUCH A REPORT MIGHT PRESENT AMONG OTHER THINGS A REVIEW OF THE CLASSES OF COMPOUNDS NOW IN COMMON USE AND THE TYPE OF EVIDENCE NECESSARY TO EVALUATE AN AGENT OR PROPOSED TREATMENT. OBVIOUSLY, MANY FACTORS MAY AFFECT SUCH A REPORT. INVESTIGATORS MAY BE INFLUENCED BY THEIR OWN IDEAS AND OPINIONS; MANY PATIENTS WITH TRICHOMONAS VAGINITIS ARE NOT DISTURBED BY THE PARASITISM AND MANY OTHERS IMPROVE OR EXPERIENCE SPONTANEOUS CURES IN A MATTER OF MONTHS; TOO OFTEN THESE ARE NO CONTROL STUDIES IN CASES WHICH FAIL TO IMPROVE SPONTANEOUSLY, FREQUENTLY BECAUSE THE PATIENT IS INSISTENT THAT SOMETHING BE DONE AT ONCE.

FURTHER DIFFICULTIES IN OFFERING CRITERIA FOR CURE OR FOR THE EVALUATION OF A DRUG ARE CONCERNED WITH THE EXISTING UNCERTAINTY OF THE ACTUAL ORIGIN OF THE DISEASE AND THE PROBABLE MULTIPLE AND VARIED CHANCES FOR REINFESTATION. WHILE SOME PATIENTS IMPROVE WITH ANY TYPE OF SIMPLE TREATMENT AND OTHERS BECOME ASYMPTOMATIC SPONTANEOUSLY, STILL OTHERS, ESPECIALLY SOME OF THE RECALCITRANT ONES, IMPROVE WHEN THE NUMBER OF AND THOROUGHNESS OF APPLICATION OF TREATMENTS ARE DECREASED.

A REVIEW OF MANY REPORTS IN MEDICAL LITERATURE REVEALS A COMMON FAILING; METHODS OF TREATMENT ARE DESCRIBED BUT WITH VERY INCOMPLETE DATA ON NUMBER OF PATIENTS, NUMBER OF CURES (COMPLETE), RECURRENCES, NUMBER AND LENGTH OF TREATMENT. IN RELATIVELY FEW CASES ARE COMPARISONS OF DIFFERENT METHODS MADE OR CONTROLS EXPLOITED. THE NUMBER OF PAPERS WHICH DO NOT REPORT ANY "FAILURES" IS SURPRISING. YET, REGARDLESS OF THESE FACTS, MANY CLAIMS ARE MADE FOR THE THERAPEUTIC EFFICACY OF INNUMERABLE AGENTS. TO EMPHASIZE THE INADEQUACIES THAT MAY EXIST, THE DIFFICULTY OF SETTING UP SATISFACTORY EVALUATION CRITERIA WITH OUR PRESENT KNOWLEDGE, AND TO SETTLE SOME OF THE UNCERTAINTY WHICH IS APPARENT IN MANY LETTERS OF INQUIRY ARRIVING AT HEADQUARTERS, THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT, AND AT THE SAME TIME EXPRESSES ITS APPRECIATION OF ASSISTANCE IN PREPARING THE REPORT FROM DR. GEORGE V. S. SMITH, PROFESSOR OF GYNECOLOGY AT HARVARD UNIVERSITY.

AUSTIN E. SMITH, M.D., Secretary.

THE STATUS OF TREATMENT OF VAGINITIS ASSOCIATED WITH TRICHOMONAS VAGINALIS

Hesseltine [1] has pointed out that investigators in the United States have made the major contributions of the past two decades to the subject of vaginal trichomoniasis. This evaluation of the status of treatment, therefore, is based practically entirely on the American literature, namely articles from the start of 1930 through 1942 and textbooks by American gynecologists, although foreign articles appearing during the same period have also been consulted.

PATHOGENICITY OF TRICHOMONAS VAGINALIS

Trussell and Plass [2] were the first to induce the disease with a bacteria free culture of the organism. Five of 9 uninfected women who were successfully inoculated developed the clinical picture of Trichomonas vaginalis vaginitis. The positive inoculations could not be related to the bacterial flora or the degree of acidity present in the vaginas of these women. Wolters and Hesseltine [1] confirmed this accomplishment, though they could not obtain so high a percentage of positive implantations. The fact that inoculations were not uniformly successful and that clinical manifestations of infection did not ensue in every patient harboring the implanted protozoa indicates that unknown conditions influence the pathogenicity of the flagellates. In keeping with this deduction is the absence of symptoms in 47 to 87 per cent of patients with vaginal trichomoniasis.[3] The situation as regards the pathogenicity of T. vaginalis is summarized by Trussell and Plass: "T. vaginalis can produce abnormal discharge and vaginal irritation in women. . . . These results should not be interpreted to mean that the altered bacterial flora commonly associated with the protozoa in clinical trichomonas vaginitis does not influence the extent of the reaction, for such organisms might logically be assumed to aggravate the inflammatory process. Furthermore, it is reasonable to assume that certain vaginitides are bacterial in origin with the protozoan parasites of secondary importance." Thus in any given case of vaginitis in which the flagellates are present one may not yet be certain whether or not T. vaginalis is the basic pathogenic factor.

SOURCE OF INFECTION WITH T. VAGINALIS

The exact origin of contamination in most cases is unknown.[4] That the mouth and rectum may be sources of infection and recurrence is accepted by a number of authors, and Karnaky [5] believed that Trichomonas buccalis and Trichomonas intestinalis changed to T. vaginalis when transplanted to the vagina. Bland and Rakoff [6] concluded that the rectum and the mouth were "improbable sources of vaginal infestation," and later attempts [7] to infect human vaginas with T. intestinalis (Trichomonas hominis) supported their conclusion. Only 2 cases of apparent T. vaginalis proctitis have been reported.[8] If T. vaginalis invades the rectum and thereby makes the feces a possible vector, one would expect more comment on rectal symptoms in the literature.

The lower urinary tract is considered to be one source of recurrence [9] and the male can infrequently be the cause of infection or reinfection.[1] The glands of Skene and Bartholin may also harbor the parasites and be foci of recurrence.[10]

Despite the gaps in knowledge there is general agreement that vaginitis associated with T. vaginalis is a clinical entity.

Hesseltine,[11] in a 1938 report on the status of therapy, urged that, before any new procedures or preparations should be recommended, adequate and satisfactory controls should be established as regards both the disease itself and also the vehicles of the various medicaments. Since then five more substances have been added to the list of recommended agents. It is easy to understand why no significant control observations have been made. If patients are sufficiently bothered they want something done; if their symptoms are not disturbing they are not likely to be cooperative in undergoing repeated investigative manipulations. To have scientific data on the course of the disease, both mild and severe, in a series of untreated cases would indeed be most desirable.

That T. vaginalis vaginitis as a clinical entity may, through the working of unknown factors, be limited sooner or later in the great majority of patients is suggested by the large percentage harboring the organism without symptoms (v. s.), by the easy curability of a large percentage of those with symptoms (v. i.) and by the paucity in the literature of information concerning failures and recurrences after a three to twenty-four month period of follow-up after treatment. A disturbing amount of persistence or recurrence after two years seemingly would have excited more detailed study and comment than indicated by the following. Kahn's [12] 47 patients had had symptoms six months to four years despite various treatments. Allen, Jensen and Wood [13] stated that 20 per cent of their patients had

1. Hesseltine, H. C.: Vulval and Vaginal Mycosis and Trichomoniasis, Am. J. Obst. & Gynec. **40**: 641 (Oct.) 1940.

2. Trussell, R. E., and Plass, E. D.: The Pathogenicity and Physiology of a Pure Culture of Trichomonas Vaginalis, Am. J. Obst. & Gynec. **40**: 883 (Nov.) 1940.

3. Cornell, E. L.; Goodman, L. J., and Matthies, M. M.: The Culture, Incidence and Treatment of Trichomonas Vaginalis, Am. J. Obst. & Gynec. **22**: 360 (Sept.) 1931. Angelucci.[26] Peterson.[20]

4. Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company, 1933, vol. III, p. 428. De Lee, J. B., and Greenhill, J. P.: Year Book of Obstetrics and Gynecology, 1940, p. 467. Davis.[28] Allen, Jensen and Wood.[13]

5. Karnaky, K. J.: A New and Improved Method of Treatment for Trichomonas Vaginalis and Other Pathological Conditions of the Vagina, M. Rec. & Annals, May 1936; Trichomonas Vaginalis and Monilia Albicans as Causes of Leukorrhea.[22]

6. Bland, P. B., and Rakoff, A. E.: The Incidence of Trichomonads in the Vagina, Mouth and Rectum: Evidence that Vaginal Trichomonads Do Not Originate in the Mouth or Intestine, J. A. M. A. **108**: 2013 (June 12) 1937.

7. Kessel, J. F., and Gafford, J. A., Jr.: Observations on the Pathology of Trichomonas Vaginitis and on Vaginal Implants with Trichomonas Vaginalis and Trichomonas Intestinalis, Am. J. Obst. & Gynec. **39**: 1005 (June) 1940. Feo, L. G.; Rakoff, A. E., and Stabler, R. M.: Inoculations of Intestinal and Vaginal Trichomonads into the Human Vagina, ibid. **42**: 276 (Sept.) 1941.

8. Peterson.[20] Zeiter.[21]

9. Hesseltine.[1] Allen, Jensen and Wood.[13]

10. Shelanski, H. H., and Savitz, S. P.: Bartholinitis and Skeneitis Due to Trichomonas Vaginalis, Am. J. Obst. & Gynec. **37**: 294 (Feb.) 1939.

11. Hesseltine, H. C.: Vaginal Trichomoniasis Therapy, Am. J. Obst. & Gynec. **35**: 1085 (June) 1938.

12. Kahn, I. W.: Treatment of Trichomonas Vaginalis Vaginitis with Sodium Perborate and Quinine, Am. J. Obst. & Gynec. **38**: 311 (Oct.) 1934.

13. Allen, E. D.; Jensen, L. B., and Wood, I. H.: Clinical and Bacteriologic Observations in Trichomonas Vaginitis, Am. J. Obst. & Gynec. **30**: 565 (Oct.) 1935.

"variable recurrent periods of infestation, some of them extending over a period of years." Mintz [14] wrote that the duration of the disease varied from one week to twelve years. One of Drabkin's [15] patients had been under treatment three and one-half years. The disease "may exist from months and even years without a change in its course." [16]

IS VAGINAL TRICHOMONIASIS POTENTIALLY DANGEROUS?

Bland, Goldstein and Wenrich [17] quoted evidence from the German literature and presented their own that T. vaginalis vaginitis increases puerperal morbidity, the criterion being a fever of 100.4 F. or higher. According to Mintz,[14] the organism "has been proved to be the causative factor in a few cases of puerperal morbidity." Szendi,[18] on the other hand, stated that the protozoon plays no role in the production of puerperal morbidity, and Moench [19] sketched the course of a patient with the "worst infestation with this protozoon" he had ever seen. The puerperium was normal and no organisms were demonstrable three months later. She had received no treatment.

Five of Ruble's [20] patients had mild pelvic inflammation while being treated, and operation showed "that type of inflammatory reaction of the pelvis which one would expect to find following gonorrheal salpingitis. . . . Pelvic cellulitis secondary to trichomonas vaginitis is more common than generally supposed." [13] According to Hees [21] T. vaginalis has been found by culture and smear in the endometrium, chronically inflamed tubes, ovarian cysts, the peritoneum, the blood stream of patients and the viscera of the fetus; and pelvic abscesses caused by the flagellate are not rare.

Karnaky [22] discussed the presence of the organism before and after operation but made no mention of surgical morbidity, from which it may be inferred that he had none for which he held the parasite responsible. Textbooks by well known gynecologists do not lay any emphasis on possible grave complications from the flagellate. If T. vaginalis had serious potentialities as regards pelvic inflammation, it seems that by now the evidence would be more definite than indicated by the foregoing available information.

TREATMENT

Opinion is practically unanimous that there is no specific or ideal therapy, that some patients are more difficult to cure than others and that treatment should be continued through the period of menstruation and as long as deemed necessary in pregnancy. Davis's [23] "results with all methods of treatment suggest that one may expect about 20 per cent of failures if results are judged on the basis of permanent absence of the flagellates from the vaginal secretion." According to Curtis,[24] "it is estimated that 85 per cent of patients obtain a clinical cure, in reality an arrest of their infection, irrespective of the treatment employed."

In the literature reviewed, the length of treatment varied from two weeks to one year, the criterion of cure was freedom from symptoms and the parasite for periods varying from two to twenty-four months after cessation of therapy and ninety substances, including vehicles, used in therapy were named, as well as acid producing bacteria, streptococcus bouillon filtrates, autogenous bacterial preparations and heat. Most methods employed two or more, up to seven, substances, not including soap and water, in combination or sequence. In the following review of reports the figures in parentheses represent the number of patients treated. Local treatment with one substance, sodium chloride (56),[25] quinine sulfate (39),[26] sodium bicarbonate (27),[26] picric acid (35)[26] and iodine (*29*),[27] was carried out in five series of cases and the results were approximately similar, viz. 80 to 85 per cent of three to eight month cures, except with iodine, which gave 53 per cent.

Local treatment with the substances sodium 3-N-methanal sulfoxylic acid-amino-4-hydroxy phenylarsonic acid (Aldarsone) in kaolin (100),[28] iodochlorhydroxy-quinoline (Vioform) in glycerin (15),[29] *p*-carbaminophenyl arsonic acid (Carbarsone) with sodium bicarbonate (210) [30] and Vioform with magnesium trisilicate (140)[31] yielded 91 to 98 per cent of two to nine month cures.

Treatments with multiple substances involved the local use of the following various ways: picric acid, and acetylaminohydroxyphenyl arsonic acid (acetarsone) in kaolin (150);[32] Vioform in glycerin and lactic acid (500);[30] Vioform in ointment and sodium chloride (106);[33] sodium perborate and quinine sulfate (alone or in starch or zinc oxide) (47);[12] cocoa butter with oxyquinoline sulfate, picric acid and menthol, lactic acid and potassium permanganate (275);[14] lactic acid, lactose, citric acid and sodium bicarbonate (35);[34] Carbarsone, sodium bicarbonate, glycerogelatin base, vinegar or lactic acid (21);[15] acetarsone, dextrose, boric acid, starch, sodium bicarbonate, tartaric acid and sodium perborate (39);[35] di-iodohydroxy-quinoline (Diodoquin) with dextrose, lactose and boric acid alone (100),[36] with vinegar (4,400)[37] or with lactic acid (*27*);[34] hydrogen peroxide, and silver picrate in kaolin and in boroglycerin (20),[38] (15);[39] silver picrate in kaolin and in boroglycerin and gelatin (695),[39] (1,646);[40] silver picrate in kaolin and in cocoa butter (100),[41] (25);[42] skim milk, Lactobacillus bulgaricus, dextrose, lactose, liquid petrolatum, starch and vinegar (50),[43] and a condensation product of m cresol sulfonic acid and formaldehyde, called negatol in powder and suppository form, and vinegar (87).[44] The percentage of two to twenty-four month cures by these medicaments and the manner of their application ranged from 88 to 100 in all but *2* [45] of the series of cases.

Known and unknown variables that must be operative in vaginitis include the many conceivable ways for the vagina to

14. Mintz, M. E.: Trichomonas Infection, M. Rec. **153:** 365 (May 21) 1941.

15. Drabkin, Charles: *p*-Carbamino Phenyl Arsonic Acid in the Treatment of Trichomonas Vaginalis Vaginitis, Am. J. Obst. & Gynec. **33:** 846 (May) 1937.

16. Adair, F. L.: Obstetrics and Gynecology, Philadelphia, Lea & Febiger, 1940, vol. II, p. 491.

17. Bland, P. B.; Goldstein, Leopold, and Wenrich, D. H.: Vaginal Trichomoniasis in the Pregnant Woman: A Clinical and Morphologic Study, J. A. M. A. **80:** 157 (Jan. 17) 1931.

18. Szendi, B.: Morphologic and Biologic Changes Caused by Trichomonas Vaginalis in the Vagina of Pregnant Women, Arch. f. Gynak. **162:** 479, 1937.

19. Moench, G. L.: Some Aspects of the Trichomonas Vaginalis Problem, M. Rec. **150:** 83 (Aug. 2) 1939.

20. Ruble, W. Kent: Trichomonas Vaginalis: A Simplified Treatment and an Explanation for the Frequency of Recurrences, Northwest Med. **33:** 14 (Jan.) 1934.

21. Hees, E.: Ascending Trichomonas Vaginalis Infection, Gynéc. et obst. **34:** 191, 1936.

22. Karnaky, K. J.: Trichomonas Vaginalis and Monilia Albicans as Causes of Leukorrhea, South. M. J. **28:** 795 (Sept.) 1935.

23. Davis, C. H.: Gynecology and Obstetrics, Hagerstown, Md., W. F. Prior Company, 1932, vol. III, chapter 7, pp. 27-32.

24. Curtis, A. H.: A Textbook of Gynecology, ed. 4, Philadelphia, W. B. Saunders Company, 1942, p. 550.

25. Rosenthal, Lazar; Schwartz, L. S., and Kaldor, Joseph: Treatment of Trichomonas Vaginitis with Concentrated Salt Solution, J. A. M. A. **105:** 105 (July 13) 1935.

26. Angelucci, Helen M.: Trichomonas Vaginalis Vaginitis, Am. J. Obst. & Gynec. **31:** 1020 (June) 1936.

27. Blinick, Gerson, and Robinson, Milton: The Treatment of Vaginal Trichomoniasis with Aqueous Solutions of Iodine, M. Rec. **155:** 333 (June) 1942.

28. One of 10 controls treated with kaolin alone was cured. Bland, P. B., and Rakoff, A. E.: Investigation of New Pentavalent Aldarsone in Treatment of Trichomonas Vaginitis, Am. J. Obst. & Gynec. **32:** 835 (Nov.) 1936.

29. Sanderlin, J. H.: Trichomonas Vaginalis Vaginitis, Tri-State M. J. **8:** 1673 (July) 1936.

30. Peterson, Paul: Trichomonas Vaginalis Vaginitis, Am. J. Obst. & Gynec. **35:** 1004 (June) 1938.

31. Zener, F. B.: Trichomonas Vaginalis Vaginitis, Am. J. Surg. **44:** 416 (May) 1939.

32. Perez, M. J.: Arenas, N., and Blanchard, O.: Treatment of Trichomal Vaginitis, Semana méd. **1:** 1532 (June) 1940.

33. Zener, F. B.: New Treatment for Trichomonas Vaginitis: Preliminary Report, Northwest Med. **36:** 7 (Jan.) 1937.

34. Elden, C. A.: Evaluation of a Particular Mode of Therapy of Trichomonas Vaginalis, Am. J. Obst. & Gynec. **43:** 1054 (June) 1942.

35. Meigs, J. V.: Treatment of Trichomonal Vaginitis with Acetarsone Tampons, New England J. Med. **226:** 562 (April 2) 1942.

36. Owen, J. D.: Treatment of Trichomonas Vaginalis Vaginitis, Wisconsin M. J. **40:** 17 (Jan.) 1941.

37. Karnaky, K. J.: Treatment of Trichomonas Vaginalis, Am. J. Surg. **48:** 216 (April) 1940.

38. Winther, Nora: Treatment of Trichomonas Vaginitis with Silver Picrate, Minnesota Med. **19:** 731 (Nov.) 1936.

39. Furnell, H. G.: Infection with Trichomonas Vaginalis: Treatment with Silver Picrate, M. J. Australia **2:** 284 (Aug. 20) 1938.

40. Corbit, J. D., Jr.; McElroy, Robert, and Clark, J. H.: Use of Silver Picrate in the Treatment of Vaginitis: A Five Year Study, J. A. M. A. **117:** 1764 (Nov. 22) 1941.

41. Buxton, Russell von L., and Shelanski, H. A.: Trichomonas Vaginalis Vaginitis, Am. J. Obst. & Gynec. **33:** 842 (May) 1937.

42. Golub, L. J., and Shelanski, H. A.: Silver Picrate Treatment of Vaginal Trichomoniasis, J. Lab. & Clin. Med. **22:** 1155 (Aug.) 1937.

43. Brady, Leo, and Reid, R. D.: The Treatment of Trichomonas Vaginalis Vaginitis with the Lactobacillus, Ann. Surg. **115:** 840 (May) 1942.

44. Filler, William; Drezner, Nathan, and Adamo, F. H.: Treatment of Trichomonas Vaginalis Vaginitis with Negatan (Negatol), Am. J. Obst. & Gynec. **43:** 1057 (June) 1942.

45. Meigs.[35] Filler, Drezner and Adamo.[44]

become contaminated with many different organisms as well as T. vaginalis, the condition of the cervix and vestibular glands, the metabolic status of the pelvic organs and of the patient and the mental reactions of patients to the pelvic situation. These and variations in the technic of treatment and in the giving and carrying out of instructions (lack of cooperation is mentioned a number of times in the literature) all affect the outcome, and some of these variables must have accounted for the following inconsistencies. "Results of treatment with acetarsone and stovarsol (equal parts of kaolin and sodium bicarbonate with 12.5 per cent of acetarsone) have been disappointing." [23] "Out of the welter of myriad treatments we have found that the simple placement of about 1.0 cc. of dry stovarsol powder in the vault of the vagina every day for six treatments is infinitely superior." [46] "Control methods were used, and it was found that apparently sodium bicarbonate by altering the p_H of the vaginal secretion seemed to work as well as stovarsol, so it was concluded that the latter was not necessary." [47] Bland and Rakoff [28] and Meigs [35] had less than average good results, whereas Perez, Arenas and Blanchard [32] had a high percentage of satisfactory results with acetarsone, there being considerable variation in technic and the use of other substances.

In this connection a number of writers emphasize the importance of general health measures; De Lee [48] had 3 patients cured for five years after medication with thyroid extract orally, and Moench [19] had a patient whose recalcitrant T. vaginalis vaginitis disappeared following operation for toxic goiter.

Consideration of the foregoing adds weight to the likelihood that vaginitis, like other local infections, may be a limited process, cure being hastened by attention to details of local and general treatment, the choice of remedies and technics of application being matters of individual preference.

TOXICITY OF MATERIALS USED IN TREATMENT

Gellhorn [49] observed no local or systemic toxic effects from the vaginal insufflation of stovarsol. One case of drug rash was reported by Campbell [50] following the vaginal application of tablets of stovarsol, and Zener [31] stated that Dr. G. C. Schauffler had had 3 cases of intolerance to a preparation of acetarsone, boric acid and glycolyzed carbohydrates. No reactions were encountered by Peterson [30] in 210 patients or by Drabkin [15] in 21 patients using carbarsone locally. Zener [31] warned that silver picrate is dangerous in an alkaline medium and reported 2 cases of moderately intense local reaction therefrom, as did Buxton and Shelanski.[41] Kahn [12] attributed two minor complications to quinine sulfate; Angelucci [24] had no trouble with quinine sulfate, but 2 of her patients reacted to picric acid. Oxyquinoline sulfate produced no toxic reactions in Mintz's [14] series. Capsules containing 1.0 Gm. of sodium perborate occasionally caused chemical burns in the vagina,[51] as did iodine in 2 instances.[27] It appears that the drugs covered in this review, as administered, were harmless in the vast majority of instances, for of 8,989 patients treated only 1 experienced a drug rash and only 13 had local effects attributed to medication.

EVALUATION

The most significant aspect of the status of therapy of Trichomonas vaginalis vaginitis is that such good results ensue from so many substances and variations in the methods of their use and that a small percentage of failures persists in spite of similar treatment. To elucidate these failures is the chief problem. In the absence of control data, the best test of a therapy, as Hesseltine [11] stated, would be in this small group, but perhaps these patients need something more than local treatment. Furthermore, are these cases failures of treatment to sterilize foci of organisms that cause recurrence or is the persistence of the disease due to repeated contamination? The question cannot be answered, since both sources of contamination and foci of recurrence are obscure in nearly every patient. It is thus impossible to define complete cures except in terms of years of follow-up examinations and, until more knowledge is acquired, no one therapeutic measure can be clearly proved superior. The status of treatment then remains a matter of personal experience with and preference for one or more of a large number of preparations.

In view of the fact that T. vaginalis cannot be proved pathogenic in every case of vaginitis in which it is found, that unknown local and general factors are operative and that the disease is not likely to be fraught with serious possibilities and may even disappear without treatment, the present aim should be not for new medicaments but for further information, especially concerning failures. In the meanwhile, thoroughness and persistence with the simplest and least messy procedures and a general health program appear to be the therapeutic objectives.

46. Cook, W. R.: Essentials of Gynecology, Philadelphia, Montreal and London, G. B. Lippincott Company, 1943, p. 263.
47. Adair, F. L.: Discussion on Allen, Jensen and Wood,[13] Am. J. Obst. & Gynec. **30**: 737 (Oct.) 1935.
48. De Lee, J. B.: Discussion on Allen, Jensen and Wood,[13] Am. J. Obst. & Gynec. **30**: 737 (Oct.) 1935.
49. Gellhorn, George: The Treatment of Trichomonas Vaginitis with Acetarsone (Stovarsol), J. A. M. A. **100**: 1765 (June 3) 1933.
50. Campbell, C. G. H.: Arsenical Intolerance and the Treatment of Trichomonas Vaginalis Infection, Lancet **2**: 688 (Sept. 18) 1937.
51. Smith, E. C.: Sodium Perborate Therapy in Trichomonas Vaginalis Vaginitis, New Orleans M. & S. J. **94**: 37 (July) 1941.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

TETANUS ANTITOXIN (See New and Nonofficial Remedies, 1943, p. 526).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tetanus Antitoxin, Pepsin Digestion Refined: Vials containing 1,500 units and syringes containing 1,500 units and 10,000 units respectively. The antitoxin differs from tetanus antitoxin-U. S. P. chiefly in the method of refinement, which is based essentially on a controlled method of selective digestion of the proteins of the immune horse blood with pepsin.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 590).

The following dosage form has been accepted:

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Tablets Thiamine Hydrochloride: 10 mg.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1943, p. 403).

The following additional dosage forms have been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Perles Diethylstilbestrol (in oil): 0.25 mg.

JOHN WYETH AND BROTHER, INC., PHILADELPHIA

Tablets Diethylstilbestrol: 0.25 mg.

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1943, p. 255).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Capsules Ephedrine Hydrochloride: 24 mg. (¾ grain).

PENTOBARBITAL SODIUM (See New and Nonofficial Remedies, 1943, p. 495).

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL COMPANY, NEW YORK

Capsules Pentobarbital Sodium: 0.1 Gm.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1943, p. 356).

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL COMPANY, NEW YORK

Tablets Aminophylline: 0.1 Gm. and 0.195 Gm.

THE LAKESIDE LABORATORIES, INC., MILWAUKEE

Tablets Aminophyllin: 0.2 Gm., enteric coated.

POSTERIOR PITUITARY INJECTION (See New and Nonofficial Remedies, 1943, p. 424).

The following dosage form has been accepted:

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Posterior Pituitary Injection: 10 cc. rubber capped vials.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 23, 1943

DOES MEDICAL EDUCATION NEED TO BE REVOLUTIONIZED?

THE WAGNER-MURRAY-DINGELL BILL: II

Is the rate of progress in medical education in America so slow and the stage which it has attained so inferior and the hope of further progress so hopeless as to call for a revolution? Those who have observed this progress and present attainments say emphatically "No." At the beginning of this century the American Medical Association first collected and published statistics on the medical school situation in this country.[1] In 1904 it created a permanent Council on Medical Education and began a series of annual conferences. In 1909, at the time of the fifth annual conference, only 17 schools required two or more years of college work for admission. Many medical schools were private enterprises depending on tuition for support. A large number made the payment of such tuition almost the only standards of admission, and often of graduation. In 1906 there were 162 medical colleges in the United States, many of them little more than "diploma mills."

The Council on Medical Education and Hospitals was without legal power; nor was it connected with any political or governmental agency. It achieved its results by advising and cooperating with medical schools, following thorough, impartial examination of curriculums, equipment, faculty and other requisites or essentials for teaching. Yet by 1943 the number of schools had been reduced to 76, whose standards of admission and whose quality of education were such as to place them among the foremost medical educational institutions in the world. This is still a larger number of medical schools than exists in any other two nations combined; they are graduating as many physicians as did the much larger number of inferior schools existing at the beginning of the century.

Medical education is the necessary ingredient for quality in medical practice. Only through improved medical education comes the possibility of better and better service to the public, carrying with it reduction in morbidity and mortality and extension of the life period.

There has been progress in medical education in other countries. In no other country, however, and certainly in none with compulsory sickness insurance, has the rate of advance been so rapid or the standards reached so high as in the United States. At the beginning of the century the superiority of European medical schools caused American physicians to flock to them to complete their education. Today the tide has been reversed. Physicians throughout the world seek American medical schools as the climax of their educational career. This period during which America outstripped the former world leaders in medical education was those years in which the physicians of the lagging nations were being forced into systems of compulsory sickness insurance.

Compulsory sickness insurance in Germany put "panel doctors," or "kassenaerzte," in a class apart from private practitioners. Even the advocates of sickness insurance will scarcely claim that the titles applied to insurance physicians carry any certification of professional superiority. In other countries insurance practitioners do not have opportunities or inducements such as have led to extensive postgraduate work among general practitioners in America.

The Wagner-Murray-Dingell Bill in section 1111 proposes an entirely new method, revolutionary in almost every point, for the support and control of American medical education. The Surgeon General of the United States Public Health Service is to make "grants-in-aid" to such institutions as he thinks "show promise of making valuable contributions to the education or training of persons useful to or needed in the furnishing of medical, hospital, disability, rehabilitation, and related benefits provided under this Act or to human knowledge with respect to the cause, prevention, mitigation, or methods of diagnosis and treatment of disease and disability." Will the Surgeon General, whoever he may be, utilize the voluntary machinery set up by the medical profession and the medical schools to determine which institutions "show promise"? This bill would destroy the voluntary organization now so effectively performing this task.

Bureaucratic control of medical education will inevitably destroy the standards of excellence that now characterize the medical schools of America. Such a revolution in control could not well avoid disrupting the methods of selecting students which is essential to the preservation of the high personal qualifications and ethical integrity of the medical profession. Only a miracle could avoid temporary or permanent deterioration, if not complete destruction, of educational standards.

1. Final Report of the Commission on Medical Education, 1932, pp. 10-11.

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TOXIC FACTORS IN SHOCK

Until recently a substance had not been isolated from animal tissues which could be held responsible for the shock syndrome. The search for the hypothetical toxic factors in tissue has been renewed in an effort to understand the mechanisms which underlie the production of symptoms in traumatic injuries.

In 1941 Bywaters and his colleagues [1] reported myohemoglobin in the urine of injured patients. These workers suggested that this pigment may be only an indicator of muscle damage and other substances released from muscle at the same time may be responsible for the structural and functional changes in the "crush kidney."

Green,[2] who studied the experimental shock produced by "hind-limb ischemia," concluded that a shock producing factor is released from asphyxiated muscle. In the first attempts to obtain from normal or asphyxiated muscles an extract which on intramuscular injection would reproduce the syndrome produced by "hind-limb ischemia" the possibility developed that the hypothetical shock factor is labile and rapidly destroyed in the dying muscle. A crude saline extract obtained from muscle immediately after its removal proved to be consistently more toxic than any previously used. The factors which produce a shocklike state after intramuscular, intraperitoneal or subcutaneous injection were provisionally called muscle shock factors.

Different species of animals treated with the muscle extracts showed the cardinal features of profound depression of all vital activities with retention of consciousness almost until death, low blood volume, variable hemoconcentration, irregular fall in blood pressure, lowering of temperature, depression of renal function with anuria, nitrogen retention, albuminuria, microscopic hematuria and granular cylindruria. The administration of myohemoglobin acts synergistically with the muscle shock factors, particularly in the production of renal damage. Necropsy reveals evidences only of generalized increase in capillary permeability. The whole syndrome is remarkably similar to that seen in shock after "hind-limb ischemia." Additional similarity is shown in the development of some degree of tolerance to repeated injections of muscle shock factors as well as to the effects of repeated "hind-limb ischemia."

The experiments provide definite evidence that toxic shock producing factors were present in both normal and asphyxiated muscles. Apparently ischemia acts only by releasing normal muscle constituents into the general circulation, where they act as shock producing factors. The isolation of these factors was the next logical step. Chemical fractionation by Bielschowsky and Green [3] of saline extract of acetone dried muscle yielded a substance which analysis showed to be pure barium adenosine triphosphate. Preliminary tests with the sodium salt of this compound indicated that it possessed the full depressor and lethal potencies of the "muscle shock factors." Whether salts of adenosine triphosphate and myohemoglobin are the only toxic factors released from injured muscle is not known. It seems, however, that adenosine triphosphate alone may be responsible for the production of all the clinical features of shock. The mode of action of the substance is not understood. It seems unlikely, however, that the known metabolic actions of this compound are responsible for its shock producing properties. Acid hydrolysis of adenosine triphosphate destroying its adenosine radical did not diminish its shock producing properties. The most probable hypothesis would be that the chemical acts through the pyrophosphate part of the molecule.

Obviously these results are important in the understanding of traumatic shock in man; however, confirmation of the original work and further experimental and clinical studies are necessary before all features of traumatic shock can be explained by this mechanism.

1. Bywaters, E. G. L.; Delory, G. E.; Rimington, Claude, and Smiles, John: Myohemoglobin in the Urine of Air Raid Casualties with Crushing Injury, Biochem. J. 35: 1164 (Nov.) 1941.
2. Green, H. N.: Shock Producing Factor(s) From Striated Muscle: I. Isolation and Biological Properties, Lancet 2: 147 (Aug. 7) 1943.
3. Bielschowsky, Marian, and Green, H. N.: II. Fractionation, Chemical Properties and Effective Doses, Lancet 2: 153 (Aug. 7) 1943.

Current Comment

DECLINE IN MATERNAL MORTALITY

Maternal mortality in the United States has decreased in the last decade by more than two thirds. The decline, according to the Statistical Bulletin of the Metropolitan Life Insurance Company for August, has been from between 6 and 7 deaths per thousand live births a year to less than 2 per thousand, despite the sharply increased birth rate and the shortage of doctors and nurses. The improvement appears to be continuous, and further reduction is to be expected. The high maternal mortality prior to 1930 was due principally to inadequate care during pregnancy, confinement and the postpartum period. The gratifying results in the reduction of the loss of life of mothers and babies were accomplished primarily by the concerted effort of the medical profession and hospital managements. The medical schools have placed greater emphasis on obstetrics and have extended their postgraduate studies in this field. The hospitals have contributed much by improving their service and particularly by segregating the obstetric wards from the other services. The federal and state operated maternity and child hygiene bureaus were instrumental in arousing the interest of communities to safeguard the lives of mothers and babies. They have provided large numbers of public health nurses to render service in the homes of pregnant women and to educate them regarding approved practices of antepartum care and confinement. Various local maternity associations and many private agencies contributed much along the same lines. The sulfonamide drugs have reduced by more than a half the mortality caused by the dreaded puerperal sepsis. The mortality from this cause prior

to 1935 could not be reduced to less than 2.4 per thousand live births. Currently the mortality rate from this cause is reported to be less than 1 per thousand. Further progress in the reduction of the loss of life of mothers and babies, it is pointed out, can be accomplished by concentrated efforts in those areas where maternal deaths are still too frequent, namely the South and Southwest. The high maternal death rate in these areas is contributed largely by the deaths among Negro women, less than half of whom are attended in their confinement by a physician.

INTERRELATIONSHIP OF ASCORBIC ACID AND THIAMINE

Four years ago Sure [1] demonstrated that rats are able to synthesize adequate amounts of ascorbic acid. The ascorbic acid content of their tissues is maintained at a normal level in spite of complete lack of ascorbic acid in the diet. This synthesis was apparently dependent on an adequate intake of certain other vitamins, prominent among them being thiamine and riboflavin. As much as 75 per cent reduction in the normal tissue concentration of ascorbic acid results from an inadequate intake of thiamine in this animal species. Dogs also normally synthesize their own vitamin C, though the relation of this synthesis to other vitamins has not yet been determined with dogs. In the course of studies of shock, Govier and his associates [2] of the Department of Pharmacology, Vanderbilt University School of Medicine, placed two groups of dogs on thiamine deficient diets. One group was given the thiamine deficiency diet suggested by Goodsell.[3] This contains casein, sucrose, cottonseed oil, agar and cod liver oil, with autoclaved brewers' yeast to supply the other B complex vitamins. The second group of dogs was fed the thiamine deficiency diet suggested by Schaefer.[4] Instead of autoclaved brewers' yeast, the dogs on this diet were given adequate amounts of riboflavin, nicotinic acid, pantothenic acid, pyridoxine and choline by stomach tube. Many of the animals on each diet developed necrotic erosions of the buccal tissues. These began around the teeth and often became so severe as to extend almost entirely around the lower jaw. On the assumption that these necroses were only indirectly due to inadequate intake of thiamine, all dogs on the deficiency diets were given 10 mg. of ascorbic acid twice weekly by stomach tube. There was a prompt healing of the oral lesions in all animals thus treated. Buccal lesions did not appear in new groups of dogs placed on thiamine deficiency diets plus ascorbic acid. The fact that ascorbic acid will prevent or cure certain secondary manifestations of thiamine deficiency in dogs is a striking extension of the known facts of vitamin interrelationships to a second animal species with suggestive bearing on problems of human nutrition.

1. Sure, Barnett; Theis, R. M., and Harrison, R. T.: Vitamin Interrelationships, J. Biol. Chem. **129**: 243 (July) 1939.
2. Govier, William M., and Greig, Margaret E.: Prevention of Oral Lesions in B_1 Avitaminotic Dogs, Science **98**: 216 (Sept. 3) 1943.
3. Goodsell, Julia, E.: Weight Changes in the Cortex and the Medulla of the Adrenal Gland of the Dog in Acute Vitamin B_1 Deficiency, Am. J. Physiol. **134**: 119 (Aug.) 1941.
4. Schaefer, A. E.; McKibben, J. M., and Elvehjem, C. A.: Nicotinic Acid Deficiency Studies in Dogs, J. Biol. Chem. **144**: 679 (Aug.) 1942.

SMALLPOX VACCINATION: A REMINDER

Recently a death from tetanus followed smallpox vaccination. A careful investigation of the manufacturing records of the lot of vaccine involved and subsequent laboratory tests on this lot have failed to give any evidence that the vaccine was at fault. However, an investigation of the circumstances surrounding the vaccination and subsequent management of the case revealed that two commercially made adhesive gauze bandages containing sulfathiazole had been applied over the site of vaccination and left in place. The first symptoms of tetanus appeared on the sixteenth day following vaccination, and death rapidly ensued. This history has its counterpart in each of the 116 cases of tetanus complicating vaccination investigated by Armstrong [1] in that a dressing was attached to the arm over the vaccination. Celluloid shields and bunion pads, fortunately, have almost disappeared as vaccination dressings. It remains for the physician to renounce all dressings attached to the vaccinated arm to rid a beneficent preventive procedure of this infrequent and preventable complication. The principles of good practice in smallpox vaccination have been clearly stated by Leake.[2] These embody the use of a properly refrigerated, potent vaccine, a small area of superficial insertion of the virus just below the deltoid muscle, the avoidance of fixed dressings and careful observation of the progress of the lesion in order to determine the immunity status of the patient. In days when ready made bandages are in every medicine cabinet there is a tendency to apply dressings to all abrasions. Admirable as such practice may be for some types of lesions, it is to be severely condemned when the fixed dressing is applied to a vaccination site. Dressings of this character tend to retain heat and moisture, thus favoring the rupture of the vesicle and the formation and retention of pus and necrotic material, ideal for anaerobic growth. Experience has shown that without such a circumstance the tetanus organism will not multiply in a vaccination wound. There is no objection to pinning a suitable dressing to the under side of a loosely fitting sleeve over the vaccinated area, particularly if the clothing is soiled.

HEALTH OF ARMED FORCES

Elsewhere in this issue (page 487) appears a detailed report released by the Office of War Information concerning the health of the armed forces of the United States. Every physician should take the time to read this report carefully so that he may participate in the pride and the glory of this magnificent record of accomplishment. Epidemic disease has been kept under control; the great menaces of previous wars have been prevented; the treatment of the wounded has been superb. And at the same time the civilian population of the United States, depleted by almost one third of the active physicians of the country, has had the lowest sickness and death rates in the history of the nation.

1. Armstrong, Charles: The Role of the Vaccination Dressing in the Production of Postvaccinal Tetanus, Pub. Health Rep. **44**: 1871 (Aug. 2) 1929.
2. Leake, J. P.: Questions and Answers on Smallpox and Vaccination, Reprint 1137 from Public Health Reports, 1939.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

HEALTH OF THE ARMED SERVICES

The following release is a slight condensation of a report prepared by the Office of War Information:

There have been flareups of diseases in the last eighteen months, but only cerebrospinal meningitis reached epidemic proportions and its death toll was low.

The situation in units overseas is occasionally even better. In those diseases for which vaccines have been developed, it is excellent. However, malaria and dysenteries present serious problems in land combat conditions, and the Navy reported some trouble with infectious jaundice and with filariasis, a parasitic inflammation of the glands which can produce elephantiasis.

Although specific problems vary, what is true of the two major branches of the armed service is in general true also of the Marine Corps, the Coast Guard, and of the women's services: the Wacs, the Waves and the Spars.

Here are some highlights of service health:

1. Disease incidence was reported in 1942 lower than the preceding year and continues good in 1943. An average of a little more than 3 per cent of the Army personnel in this country was off duty because of sickness or nonbattle injuries at any given time during 1942; abroad the rate was slightly lower, even including battle casualties. The Navy's corresponding "noneffective" rate stood at approximately 2 per cent in 1942, also a record low.

2. The Army and Navy make a good report on incidence of venereal diseases among the men. Despite a policy of accepting inductees with uncomplicated cases because of the high percentage of cures possible with new treatments, the Army in the continental United States this year up to August 1 reported an average of some 40 treated annually per thousand men, and the Navy an average 33 men per thousand. If those infected before induction are eliminated from the calculation, the Army's figures stand at an all time low of 25 treated per thousand men, the average for 1943 up to August 1. In this class of diseases there is a wide divergence between the major branches and the women's services. Fewer than one in ten thousand women in the uniformed services has been admitted to treatment for venereal diseases. Thanks to new types of treatments, the disability rate for these ailments is low. Of some 1,100 Wacs released for disability in a ten month period, only one was discharged because of syphilis and only one because of gonorrhea.

3. Cerebrospinal fever (meningococcic meningitis), which threatened to reach epidemic proportions in the early months of 1943, was controlled promptly in service posts through the use of sulfonamides to treat those infected and also in preventive dosages for those who might have had contact with the stricken man. As a consequence the peak rate of the disease lasted only a brief while, and the epidemic fell off quickly. The whole pattern of the epidemic reflected the greater controls possible in military establishments as opposed to the civilian community as a whole. Deaths which in previous epidemics ran from 30 to 40 per cent of those contracting the disease were held to three to five deaths out of every hundred cases.

4. The armed forces use preventive vaccines against seven key diseases: typhoid, smallpox, tetanus, typhus, yellow fever, cholera and plague. In this war there have been no cases of yellow fever in either the Army or the Navy and only a scattering of reports among the other diseases, including 1 Navy case of plague. Deaths among this group of diseases were negligible. The Army reported about 60 cases of typhoid but very few deaths in 1942, the Navy 8 cases and one death in 1942.

5. Dysenteries and diarrhea, including food poisoning, is the Army's second greatest disease threat in number of cases among overseas troops. The Army reports about 7 cases per thousand men in continental United States for 1942. In combat zones abroad admissions to treatment averaged about 30 men per thousand annually in 1942 and about 50 in 1943, a good record in contrast to other wars. The higher rate for 1943 was due mainly to the larger concentrations of troops in areas where these diseases have a high incidence. The sulfonamides help effect prompt cures of these ailments also.

6. Malaria is a leading disease enemy overseas in land operations in malarious areas. Rates of infection in particular theaters are held secret for security reasons, but strong preventive action is being taken and the Army and Navy believe our record is superior to that of enemy forces. There are adequate supplies of essential drugs.

CEREBROSPINAL MENINGITIS

In the Army camps the epidemic of cerebrospinal meningitis reached its highest rate in March 1943, when its potential was about 3 per thousand men annually. It then fell off to a low level. Currently the rate is about one-tenth that of March in the entire army in continental United States. The Navy's rate for the week ended August 28 was 0.01 per thousand (1 in 100,000). The calculation used by the armed services "per thousand men per year" states the number of men per thousand who in the course of a year may be expected to be hospitalized for a given sickness if the incidence rate continues at the level noted for any special segment of a year.

In civilian records both the rise and the fall of the cerebrospinal meningitis epidemic is much more gradual. It struck a high level in January of this year, rose to a crest in the week of April 17 and held close to that point for a month. In contrast to the sharp reduction of the number of cases in military establishments, the civilian epidemic decreased very slowly. In July and August, when the disease apparently was under control in armed camps, cerebrospinal meningitis was still running at five to eight times the five year median among civilians.

These contrasting records are interpreted as an indication that the prompt control methods instituted by the Army were effective. Recovery from cerebrospinal meningitis has become reasonably certain, it is stated, except in those cases which are classed as "fulminating"; that is, in which the course of the disease is so rapid, or diagnosis so delayed, that sulfonamide drugs do not have time to take effect.

VACCINES

Another sharp contrast between civilian and service health is shown overseas by rates of infection and mortality in those diseases for which the Army and the Navy have been provided with preventive vaccines. Incidence of these ailments among service personnel is so low that rates of infection are negligible. Inoculations used in both the Army and the Navy include typhoid, smallpox, tetanus, yellow fever, typhus, cholera and plague. Some are given to all personnel, others only when there is danger of infection. In these diseases the Army reports only a few scattered cases during 1942: no yellow fever, no cholera, some 50 cases of typhus, but almost no deaths; almost no smallpox or plague, practically no cases of tetanus among inoculated men. Only a few scattered deaths were reported from this entire group of diseases in the Army. The Navy reports for 1942 show 19 cases of typhus and 1 of plague, with no deaths; 8 cases of typhoid, with one death; no cases of any of the other diseases against which vaccines are employed.

TYPHUS

Before the war's end, American soldiers undoubtedly will be fighting in areas where from 1917 to 1922 an estimated 10 million cases of typhus were reported, which resulted in approximately five million deaths. This epidemic area extends from Iran and Egypt northward through the Balkans into Poland. The global endemic area of this disease is even greater than that covered by malaria, which so far is the major disease threat in this war.

Typhus was not a problem to American soldiers in the last war because they did not fight in districts where typhus is found. This time American soldiers already have seen action in areas of infection, and the record is excellent.

Every member of our armed forces who goes into typhus zones receives three injections of typhus vaccine. Stimulating inoculations are given at intervals. This was the preparation of our soldiers who went into Egypt and North Africa.

While our forces were quartered in Egypt, there was a serious typhus epidemic among the civilian population, with an officially reported total of 32,000 cases in the first six months of 1943. There were 500 cases a week in Cairo alone during the peak of the epidemic. The death rate, as is usual with typhus, was about 30 per cent. The United States Army reported less than a score of cases and almost no deaths from typhus in the entire Middle East command during the first six months of 1943.

The vaccine used for our forces is stated to be the most effective in the world. The Germans are known to have a typhus vaccine, but it has been proved that German soldiers, on the North African front at least, are not effectively immunized; nor are the Germans believed to have the vaccine in general use as yet. Other protective measures against typhus used by the armed forces include portable live steam equipment for delousing and disinfecting clothing, which, carried in two trucks, can be shifted to various areas; fumigation delousing equipment, consisting of a synthetic rubber bag or a fumigation chamber and chemical capsules; louse repellent powders, which, applied at weekly intervals to clothing, seem to prove effective in preventing infestation of the troops. It was emphasized that typhus, unless checked, could constitute a threat to the home front also. Strenuous effort in the last war prevented importation of the louse borne strain of typhus, which is unknown in this country, although there is a weaker type of which the transmitting agent is the rat flea. To fight the disease at home and abroad, the United States of America Typhus Commission was created by an executive order of the President, Dec. 24, 1942.

Members of the commission made field examinations of soldiers to determine the effectiveness of the new control methods. They also acquired sixty-nine distinct strains of typhus from various sources and four thousand serums from typhus victims, the greatest collection ever brought together at one time. The strains came from Russia, Servia, Syria, Palestine, Iraq, Iran, Egypt and North Africa. These samples, packed in solidified carbon dioxide and flown back from Cairo to the United States, are to be used to test the effectiveness of the present vaccine and many other studies.

According to a member of the commission, the low incidence of typhus in the United States armies under epidemic conditions is presumptive evidence of the effectiveness of our vaccine. By testing it against the various strains of the diseases a definite proof can be obtained. Should the inoculation prove good only against certain strains, means can be sought to widen its efficacy. The present vaccine was developed from a strain taken in Prague in 1928. Study of the serums and strains may also make possible positive identification and diagnosis of the disease in individuals by laboratory tests.

MALARIA

Malaria constitutes a major health menace of the Army and Navy in foreign land operations in malarious areas. At home the rate is at a low level. The Army reports a rate of infection of about 0.6 men per thousand annually for this disease in 1942, or 6 men in 10,000 infected in the course of a year, and only a slightly higher rate thus far in 1943. This record is particularly good because it includes men in the continental United States who had contracted the disease in foreign areas.

It was stated on behalf of the Army that, in foreign areas, our position is better than that of other armies operating in the same theaters, and that, considering the severity of infectious conditions, our record is good. It was stressed that malaria is preventable through educating individual soldiers and officers to use constant precautions and to take full advantage of the accomplishments of science and sanitation in combating the mosquitoes which transmit the germs.

The Army's malaria rate for overseas units in 1942 was about 30 men out of a thousand, and so far in 1943 the equivalent rate is about 80. The rise this year is attributed to increased war activity in malarial areas. The number of cases of the disease in any definite locality cannot be published, according to the Army, because the enemy could use such figures to estimate the number of soldiers stationed in that area. The same explanation of security applies to specific information about many of the safeguards used by our troops in the campaign against malaria. It is stated that the Japanese failed to make adequate preparations against the fever and, as a consequence, their troops are suffering much more acutely than our own.

Security reasons explain also the lack of locality information in the Navy's statistical picture: North African bases, 17.45 per thousand; outlying and "confidential" bases, 86.03; fleet marine forces (landing forces), 155.53 (this figure would include such troops as those who landed in Guadalcanal, where the malarial situation seems to have been as severe as in any other area); naval training stations, 0.04; forces ashore, 15.00; forces afloat, 8.40; entire navy, 13.59.

The fight against malaria is primarily directed at destroying, or repelling, the mosquitoes which transmit the germ. The same repellents and larvicides work for all, but elimination of the mosquito vectors—those species which transmit the germs from human carriers to infect other human beings—from any given area is a much more complicated task. There are many varieties of mosquito vectors, with different breeding habits, and scarcely any two areas have the same pest to fight. For instance there is one mosquito along the Malay shores, and 20 miles inland an entirely different one. Some areas have more than one vector, one of which breeds in the shade, another in the sun. Thus, elimination of the shaded areas in which one bred would only provide large breeding areas for the other. Some breed in stagnant water, some in pools beside running water, some in brackish water. The vector in each case must be identified before its breeding areas can be attacked. The complexity of this work can be seen from the statement of Army epidemiologists that the variety in the Solomons differs from that in India, and that in turn from the vector in Burma, while China has still another. Even Italy and Albania, although separated only by a narrow body of water, have different varieties of mosquito. One fact limits the danger of infection: almost all of the more numerous vectors of malaria are night feeding. In thick jungles, where there is a perpetual twilight, the mosquitoes fly throughout daylight hours also. Exclusive of such areas, however, danger of infection is generally limited to periods of night combat because of protection afforded in barracks, camps and bivouacs.

There has been made available to troops, through collaboration of the U. S. Department of Agriculture, the Army and the United States Public Health Service, a repellent which, even under strenuous combat conditions, is effective for four hours. In bivouac its strength lasts up to six hours. This repellent, designated as Formula 612, is colorless and odorless, nonirritating and does not damage clothing, and a 2 ounce bottle contains enough for one man's use for a month. It is not an essential oil, like citronella, but a synthetic organic compound. Furthermore, a "foolproof" mosquito bar has been developed for camps, and, in barracks, the much publicized "health bomb" can be depended on to destroy all insect life in a space of 150,000 cubic feet. The Army previously withheld details on the contents of the "bomb" lest the enemy profit, but this prohibition was ignored by certain publications. The contents are a refrigerating chemical known as "freon," which boils at 40 degrees, combined with pyrethrum and sesame oil.

The devices which have proved so effective in home areas, where the malarial rate now is almost nil, are difficult to employ

in tropical, or combat, areas. In this country the breeding places of our particular mosquito vector, Anopheles quadrimaculatus, are destroyed by drainage of low lands and by the use of oil and larvicides. Present larvicides must be used at intervals of five to seven days, but one is being tested which can be dusted from airplanes and which is expected to prove effective up to thirty days.

The difficulty of protecting troops against this disease lies primarily in the fact that each man must take care of himself. The devices for eliminating, or foiling, the mosquito vector are provided, but under combat conditions men sometimes fail to use them. Consequently "suppressors" are administered to all troops at regular intervals. These drugs serve to keep the disease in a dormant phase. During rest periods, suppressant drugs are suspended in order to discover and treat such cases of malaria as may have been contracted. However, if proper precautions are taken, suppressant drugs are not necessary, it was stated on behalf of the Surgeon General's Office. A trip by a medical commission to the highly infectious Central Africa area was cited. The medical commission used the devices made available to all the men, took no drugs, and returned with an absolutely clean bill of health: no malaria.

RECORDS ON HEALTH

Previous to the last war, disease regularly killed two and three times the number of men who died of combat wounds. In the last war, in spite of the influenza pandemic which distorted the statistics, somewhat less than one half of all deaths were from disease or approximately the same number as were killed in action or died of combat wounds, nonbattle injuries accounting for about 4 per cent of all deaths.

Disease Incidence.—In 1942 this is reported lower in the Army than in the two preceding years and continues good in 1943; the Navy's report is largely parallel.

The Army's "noneffective" rate showed that in 1942 an average of only 3 per cent of the men were incapacitated for duty at any given time in continental United States, while in the overseas area the rate was even lower. The Navy's "noneffective rate" stood at 2 per cent in 1942, the last year for which figures are available.

In continental United States, disease admissions to Army hospitals for 1942 were approximately 20 per cent below 1941. In respiratory diseases, 1942 showed a drop of more than a fourth under 1941. During 1943 the record in both admissions from all causes and respiratory diseases is not as good as 1942 for the same period but still is better than 1941.

The Navy reports on various communicable diseases show large decreases from the levels of the last war. Lobar pneumonia killed 107 of every thousand patients in the last war but only 8 out of every thousand in 1942. Two diseases usually thought of as afflicting only children were a severe problem in the last war. Measles infected 31 out of every thousand enlisted men in 1917, 14 out of every thousand in 1918. In 1942 the rate was down to 4 per thousand. Mumps, which disabled many men in the last war, dropped from 40 in 1917 to 7 in 1942, a reduction of about 82 per cent. Scarlet fever is about 75 per cent as prevalent as in the last war; its death rate dropped from 2.72 to zero. The diphtheria death rate fell from 9.57 to 0.20, measles from 22.83 to zero.

Venereal diseases, thanks to new treatments and more widespread education, present a vastly different aspect from that of the last war, when the Navy admissions for all venereal diseases ran 89 per thousand men in 1917 and 70.20 in 1918. In 1942 this figure had been more than sliced in half, and the rate was 33 per thousand.

The Army's rate of infection was even higher in the last war, running at over 9 per cent in 1918, over 90 men a year out of every thousand. The annual rate for 1940 in the continental United States was less than half that, approximately 40 men per thousand, and it has continued at that low level to date. The armed forces now accept inductees with uncomplicated cases of venereal diseases because of the high percentage of cures. If this group of infected inductees is eliminated from the overall figure the current figures drop to an unprecedented low rate of about 25 men out of a thousand; that is, only 2.5 per cent of the personnel become infected with venereal disease in the course of a year.

Dysenterics (including diarrheas).—These cause a large number of hospital admissions in the Army on overseas duty. There have been sporadic outbreaks at home, but through sanitary controls the rate has been held to approximately 7 per thousand men in 1942, and although the rate has gone up the record is still good so far in 1943. At the present time, dysenteries are chiefly formidable in that they incapacitate men for active duty. The sulfonamides once more do yeoman service here—this time it is sulfaguanidine—effecting cures of even the more severe bacillary dysenteries in five to seven days.

Overseas, where under combat conditions sanitary controls are more difficult, the rate is higher, running about 30 men per thousand contracting the ailment in 1942. There has since been a further increase due once more to increased war activity in regions where these diseases are prevalent, and the rate thus far in 1943 has been about 50. This figure means that, out of every thousand men in overseas service during a year, 50 will be hospitalized for dysenteries if the average rate for the year thus far continues to operate.

The Navy reports a rate of 16.44 men per thousand admitted to treatment during 1942 for a group of ten selected gastroenteric disturbances, including food poisoning, food infections and the dysenteries. The nine year median of these ailments is 16.30 men per thousand, so that the war rate for this group is consistent with the peacetime average.

The chief work of preventing gastrointestinal infections devolves on sanitation. Water is carefully inspected and treated. Sometimes it is boiled, often filtered and chlorinated. Messes are carefully supervised, and the sanitary measures employed there are checked constantly by the medical departments. Food handlers are inspected regularly. Ashore, fly control is important, and inspection of animal foods under the veterinary section and of fresh vegetables by the medical division are strictly enforced. Storage of food and refrigeration also are a matter of regulations.

Despite those strenuous efforts there have been outbreaks of food poisoning and dysenteries. Laboratory tests on the causes of 169 outbreaks traced 28 of them chiefly to the Flexner dysentery bacilli and to staphylococci. At least one outbreak was attributed to "faulty housekeeping." In this connection it was pointed out that the methods of dishwashing used in homes would be totally inadequate in camps. Dish towels are forbidden both because of possible contamination through the cloth and because "wiping" can cover up inadequate washing. The length of time dishes must be washed and the temperature of the water are a matter of army regulations. All dishes must be washed "not less than forty seconds in water of 140 degrees." This must be followed by "immersion for thirty to sixty seconds" in water of the germ killing temperature of 180 degrees. Where thermometers are not available, boiling water must be used; where heating facilities are scanty, a chlorination process is required to make sure of disinfecting the dishes.

Garbage cans must be kept covered, must be cleansed daily and may not be emptied from one container to another. Instead, cans are loaded on trucks, hauled to the compost and emptied there, cleansed and then returned. It is forbidden to whitewash the cans, because they might thus give a deceptive appearance of cleanliness and so might not receive a thorough scrubbing. The compost heaps are ditched and treated with oil to prevent attraction and breeding of insects. This does not affect the value of the compost fertilizer. "It is not unusual," it was stated, "to see such composts completely free of flies."

OTHER DISEASES

In the last war the influenza pandemic was responsible for in the neighborhood of 800,000 admissions to hospitals and for perhaps 25,000 deaths in addition to many deaths ascribed to pneumonia but brought on as a result of influenza infection. With other respiratory diseases it caused about one third of the total admissions for disease in 1918, and roughly 80 per cent of disease deaths.

In general, conditions have been better in this war. An outbreak of mild influenza started in December 1941 and carried over into early 1942 and produced relatively high admission rates. Subsequently the curve has shown only the expected seasonal variations. Practically no deaths occurred as a result of this outbreak.

One form of pneumonia, designated by the Army as "primary typical pneumonia," appeared during the last year. In March 1942 the Surgeon General called attention to the disease and so designated it. In the first month there were over 100 cases reported, and the frequency increased to a peak in April 1943 of about 3,500 cases. Since then there has been some decline. Mortality is low, but the disease contributes heavily to keeping men off active duty, since lesions, demonstrable by x-ray, persist for several weeks. In the Navy, cases of atypical pneumonia ran 1.5 per thousand during the first six months of 1943.

Measles.—Epidemic during the last war, measles has been relatively unimportant this time to either Army or Navy. In March 1941 measles reached a peak rate of almost 60 per thousand annually in the Army in the continental United States. In March, peak month in 1943, it was about 30. During the last war it was the sixth greatest cause of admissions to hospitals on account of disease, the seventh in loss of time and fourth among the diseases as cause of death. By far the larger number of deaths from measles was caused by complications, of which the most important was streptococcic bronchopneumonia.

Mumps.—In the last war mumps was fourth in numerical frequency among diseases in the Army. It was third as a cause of loss of time in the Army, first cause in the Navy, and in 1918 showed the exceptionally high rate of roughly 70 per thousand annually in the Army, 35 per thousand in the Navy. It has caused but little trouble in this war. The Navy reports an incidence of 7 cases per thousand.

Tuberculosis.—This disease was a costly factor in the last war. The rate for the Army was 9 men per thousand in admissions to hospitals. It caused 6 discharges for disability annually per thousand men in the Army. The death rate was about 0.7 per thousand. It was first among all reasons for dismissal from the Army, causing almost 15 per cent of the disability discharges. It was felt that tuberculosis often was present before men were admitted into the armed forces and that gas injury rarely was an actual cause. In this war all inductees received chest x-ray examination in their preliminary examination. This is considered the best method of detecting incipient or early tuberculosis, and many men have been brought under treatment as a result of this process.

Venereal Diseases.—These ranked second as a cause of admission to hospitals during the last war and second in loss of time. They present a much more hopeful picture now. Because new methods of treatment indicate a high percentage of cure, the Army now is accepting men who have uncomplicated cases of venereal diseases. Sulfonamides are used for gonorrhea, and cures run about 80 per cent in the period of ten days. Syphilis often yields to new technics within a maximum of six weeks. The Army lays stress also on improved prophylactic facilities and extensive instruction of the men in the hazards of the disease. There are periodic and surprise inspections. Recreational facilities are provided within the camps, and civilian authorities have cooperated in providing healthful entertainment in the cities.

Filariasis.—This tropical disease, a parasitic ailment transmitted by mosquitoes, causes some concern among naval forces. Its endemic areas cover a large part of the tropical zone of the world. The larvae of the parasitic worm are injected through the bite of the mosquito, and the life cycle of the microfilariae in the human system results in lesions and glandular swellings. Elephantiasis, or gross deformation through enlargement of certain parts of the body, has been traced to one variety of this parasite. The disease is of slow development, and the Navy and the Army are alert to avert infection of the personnel. Reports show fewer than seven cases per hundred thousand men in the Navy.

WOMEN'S AUXILIARIES

With the exception of the Wacs, the women's services keep no separate records, and their care and standards of health are incorporated in the reports of the parent services. It is stated, however, that their health problems are much the same as for the men save for venereal diseases, in which their record is much better.

The Army has prepared a statement of the causes of discharge for those Wacs released for disability. It shows that about 25 per cent were released because of ailments or defects peculiar to women and about 45 per cent for neuropsychiatric disorders. In explanation of the latter statement it is said that many of those discharged for neuropsychiatric disorders would probably not be considered as abnormal in civilian life.

Of other individual defects, arthritis caused 4 per cent of all discharges, foot defects 4 per cent and organic heart disease 2 per cent. Discharges for venereal diseases are negligible. The total number discharged for medical reasons from August 1942 to May 1943, the period covered by the report, was about 1,100.

COAST GUARD

At the present time the Coast Guard has available 1,447 beds in various infirmaries throughout the service. This number of beds is entirely independent from the facilities of either the Marine Hospitals of the Public Health Service, which currently are supplying 1,536 beds for coast guardsmen or naval hospitals. Naval hospitals admit Coast Guard patients when necessary.

The Coast Guard is operating eighteen mobile dental clinics for personnel serving at isolated stations within the continental limits of the United States. These mobile stations are equipped to operate with or without commercial electric current.

The average number of coast guardsmen ill of communicable disease admitted per week has been 500. Owing to lack of clerical help, the Coast Guard is unable to provide accurate statistics or to compute the annual rate per thousand for such conditions. At present 143 dental officers and 294 medical officers of the Public Health Service are serving full time with the Coast Guard.

DENTAL CARE

The Army has a Dental Corps of 13,000 officers, wishes to commission another 800 civilian dentists and will commission another thousand from dental schools. Those in the service now have a record of 4 million cases admitted to treatment during 1942 and more than 12½ million sittings. They installed more than seven and a half million fillings and, during the month of March 1943, extracted 582,546 teeth. In the same month they installed 456,783 dentures, and it was stated that more than half the patients treated had not been accustomed to visit dentists regularly.

Dental infection in the United States is placed at 16 per thousand men; overseas as less, 13 per thousand. Dentists have been provided with portable equipment, collapsible chairs, foot powered drills and portable sterilizers for use close to combat areas. Records show that there are, under these conditions, about 250 sittings per thousand men.

The Navy has 4,000 dental officers, at least 1 assigned to every ship of cruiser class, or larger, and to every tender, hospital ship and transport. In a recent month the corps installed 50,000 fillings and restorations. Naval dentists have the same training routine as the doctors, since they may have to double for medical officers in the exigencies of combat. Their training school is at Bethesda, Md., and they may volunteer for special services such as paratroops, marine or submarine work. Those who specialize in maxillofacial surgery are sent to the Mayo Clinic for study. This work of restoring facial structure damaged in battle may include plastic surgery also and has an important place in service plans for rehabilitation of service men after and during the war.

HOSPITAL FACILITIES

The Army maintains about eighty general hospitals in the United States. These generally contain a thousand beds or more each. Backing up these large institutions, the department maintains hospitals of from 25 up to 1,000 or more beds at some six hundred posts, camps and stations around the world. The number of beds available in the United States for Army personnel totaled about 350,000 in September, with more hospitals building. In addition to these there are many hospitals established abroad. The Navy has hospital ships and mobile hospital units which comprise 1,000 beds. The Army has base hospitals, field hospital units, evacuation hospitals and casualty stations organized right up to the front lines in combat areas.

In continental United States the Navy maintains thirty-six hospitals and seven convalescent hospitals with a total of 40,000 beds, in addition to dispensaries at posts and stations with a total of 25,000 beds.

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ARMY

REHABILITATION OF THE BLIND AND HARD OF HEARING IN ARMY HOSPITALS

The War Department, Washington, D. C., recently released Circular Letter No. 162 regarding the rehabilitation of the blind and hard of hearing in army hospitals, which is as follows:

STATEMENT OF POLICY

(*a*) Deafness and blindness are deprivations of an essential means of orientation of the normal person. The particular emotional problems of the newly blinded and deafened and their need for assistance in learning how to live without sight and hearing create a need for specialized rehabilitation.

(*b*) It has been established that it is essential to make an early contact with the handicapped soldier by trained personnel who can encourage him and help him to look forward hopefully to the future. Oftentimes the onset of blindness or deafness is coincident with convalescence from severe medical illness or complicating wounds which will confine a patient in the hospital for a long period of time. Early treatment which restores some of the patient's confidence and optimism will do much to shorten the rehabilitation period. It is for this reason that the program is to be started in an Army hospital instead of waiting until after the patient's discharge. It is the intention of the Medical Department to make available during the period of Army hospitalization of rehabilitation service to all who lose their eyesight or their hearing, either here or abroad. The Army does not intend to take over the entire rehabilitation program; that is the province of the Veterans' Administration for pensionable disabilities or, in cases not eligible for veterans' benefits, of the State Vocational Rehabilitation Services.

(*c*) The method of admission to a rehabilitation service of a soldier with blindness or with defective hearing, to a degree which precludes the return of the patient to duty, is described in a memorandum of the Adjutant General, W40-14-43, 28 May 1943. This memorandum states that patients received from overseas who require specialized treatment for blindness will be classified by general hospitals receiving them and reported to the Surgeon General for transfer to the Valley Forge General Hospital, Phoenixville, Pa., or the Letterman General Hospital at San Francisco. The same procedure governs the care of the deaf, who may be transferred to Deshon General Hospital, Butler, Pa., Hoff General Hospital, Santa Barbara, Calif., or Borden General Hospital at Chickasha, Okla. Patients requiring such treatment, whose disability was incurred in continental United States, should also be reported with a view to transfer to specialized hospitals when their physical condition does not preclude travel. The special personnel and equipment needed for rehabilitation work is not available for general use elsewhere.

THE REHABILITATION PROGRAM FOR THE BLIND

(*a*) It is intended that contact be made with the blind soldier at the earliest possible time by a blind worker before the psychologic aspects of the deprivation of sight may make any deep inroads on the personality. The possibility of a happy life may be best presented by one familiar with the hardships of that experience.

1. *Blind Consultant.*—A blind man well adjusted to his handicap and capable of imparting that philosophy of life so essential in securing proper psychologic support has been appointed to serve in this capacity. It is intended that the consultant travel to station or general hospitals where blinded casualties are detained in advance of their being sent to the special hospital center for the blind. He is available for this service and will be advised by the Surgeon General of cases of blindness in other than special hospitals in order that he may visit them. The consultant may be expected to assist the medical staff to institute a program of rehabilitation and to arrange for local agencies to participate on a voluntary basis.

The necessity for prompt notification of the Surgeon General's Office of blinded casualties in the manner outlined in paragraph *b* in the statement of policy is evident.

(*b*) The Medical Department has placed in the hospitals designated for the care of the blind well qualified specialists in diseases of the eye and in those related conditions requiring maxillofacial and plastic surgery. Every blinded patient should have the benefit of a psychiatric consultation and an evaluation of special problems that may exist.

(*c*) Education for Social Living: 1. Ward Care and Activities: All personnel who are to handle blinded patients should be instructed in the proper approach to the problems of the blind. Retraining in self care is essential. Avoid excesses of sympathy and doing too much for the patient. Protect him from well intentioned, untrained people who want to "do something helpful." Teach the patient to help himself. Encourage the patient to participate fully in daily physical, educational, recreational and social activities.

2. *Instruction in Special Technics.*—Trained instructors of the blind should conduct individual lessons in braille reading and writing, in typing and handwriting, and in the use of other technics and devices used by the blind. Braille can often be introduced to the patient through learning to play cards marked with symbols. Plunging a newly blinded person too suddenly into braille training is often discouraging. The occupational therapist may teach motor coordination which assists in the mastery of the environment. Ability to use one's hands and to accomplish the ordinary tasks, the development of skills, does much to give the person confidence that he is on his way once again to becoming a healthy person. The Red Cross recreational worker may encourage the patient to participate in both indoor and outdoor recreational activities and to continue normal social relationships.

(*d*) The Attitude of the Family: The social worker should assist in the very important problem of preparing the family for the reception of the blind patient in the home. An emotionally upset and oversympathetic family may, through its pity, destroy much of the self confidence and self reliance that the patient will learn unless they are prepared to meet the situation wisely. The social worker should discuss the problem with the family before they visit the patient the first time. Through their agencies the Red Cross can reach into the home and bring the interpretations necessary in every case before the patient leaves on furlough or is discharged. The social worker will also make certain that the patient is given every encouragement to continue his retraining under the direction of the Veterans' Administration and will help the patient to understand the programs and pensions available for his continued care.

(*e*) Further Care of the Blind: 1. Usually it will be possible to transfer the blinded casualty to the hospital center which has facilities and special personnel for retraining.

2. The Veterans' Administration is charged with the responsibility for rehabilitation of blindness, acquired in line of duty, and for vocational training necessary to restore the patient to a position in society where he may be reasonably self reliant if this is at all possible. Encourage every patient who is to be discharged to file an application for training with the Veterans' Administration facility located nearest his place of residence before making any other plans for after-care.

THE REHABILITATION PROGRAM FOR THE DEAF

(*a*) *The Initial Trauma of Deafness.*—It has been said that deafness offers a more severe handicap than blindness. Its disturbing effect on the personality has long been recognized. The individual feels alone, seclusive and sensitive, and is very likely to feel talked about. Oftentimes he becomes preoccupied and self centered. The importance of an early contact with a hard of hearing person cannot be overemphasized, as the destructive effects on the personality can be offset by an intelligent optimism as opportunities for retraining and lip reading are made clear.

(*b*) *Medical Aid.*—The three centers named for the care of those with impaired hearing have been staffed with experts in diseases of the ear. Special equipment for the testing of hearing and speech reception are made available in those insti-

tutions. During the period of reconstructive operations and during the period of complications, speech training and lip reading are given in order that the patient may be well on the road to self sufficiency by the time he is ready to leave the hospital.

(*c*) *Hearing Aid Policy.*—Hearing aids will be furnished by the Medical Department to military personnel suffering from hearing defects, incurred in line of duty, that preclude the performance of military duty, when examination shows that such aids will materially improve the hearing of the individuals concerned and when extended hospitalization is necessary before discharge can be accomplished or it is desired to retain the individual on a duty status. The hospitals designated for the reception of patients with impaired hearing have the equipment necessary to fit hearing aids most expeditiously to the particular requirements of the individual.

(*d*) *Education for Social Living.*—1. Ward Care and Activities: All personnel who are to handle patients with impaired hearing should be specially instructed in the procedures necessary to serve best the hard of hearing. This includes supportive care to build a feeling of security, the efforts to bring the patient into normal contacts with others and the constant awareness of the small helpful acts that help to compensate for loss of hearing. A full daily program of activities that leaves little time for self pity should be arranged.

2. Instruction in Special Technics: A trained instructor in lip reading should conduct individual lessons. A speech teacher may also be useful to protect against the deterioration of speech. Every effort should be made to insure proper speech habits. Occupational therapy, diversional activities, entertainment and recreational facilities should be fully utilized in order that the patient may be kept in social contact with others.

3. The Attitude of the Family: As was suggested in the program for the blind, the social worker must also prepare the family for the reception of the deaf patient. The family also needs to know how to help the patient continue his training in lip reading. In all instances where the patient does not elect or is ineligible to continue rehabilitation under the provisions of the Veterans' Administration, the social worker should make certain that the patient is familiar with pension plans, state vocational rehabilitation services and the opportunities for continuation of training in his own community.

(*e*) *Transfer to the Special Center.*—In most instances it will be desirable to transfer the patient with impaired hearing to one of the three designated centers where equipment and special personnel are available. Wherever this is not possible, hospitals should take steps to secure the cooperation of local agencies for the hard of hearing within the area to provide on a voluntary basis such service until it is possible to place the patient under the care of the rehabilitation service of the designated hospital.

MAJOR CHARLES R. YANCEY AWARDED SILVER STAR MEDAL

According to an announcement printed in the Nashville (Tenn.) *Banner* of September 22, Major Charles R. Yancey, former Nashville physician now attached to the U. S. Army Medical Corps in the South Pacific, has been awarded the Silver Star Medal "for conspicuous gallantry and intrepidity in action against the enemy on Guadalcanal, British Solomon Islands, during the night of Oct. 13, 1942. . . ." The citation, issued before he received his promotion, further stated that "Captain Yancey, a medical officer, was attached to a unit which was being subjected to the enemy's naval bombardment for the first time. Captain Yancey's cool judgment and personal example were responsible for keeping under control a large group of men, who through inexperience might otherwise have exposed themselves to injury. He calmly treated the wounded during the height of the bombardment. His professional skill and personal example saved many lives which might otherwise have been lost."

Major Yancey graduated from Vanderbilt University School of Medicine in 1937 and at the time of his enlistment, some two years ago, was resident surgeon at St. Thomas and Protestant hospitals in Nashville.

LIEUT. COL. SIMON WARMENHOVEN RECEIVES DISTINGUISHED SERVICE CROSS

According to the War Department, Washington, D. C., Lieut. Col. Simon Warmenhoven, M. C., U. S. Army, was recently awarded the Distinguished Service Cross for "extraordinary heroism in action near Soputa, New Guinea, on Nov. 26, 1942. While serving as surgeon of an infantry regiment, Lieutenant Colonel Warmenhoven volunteered to accompany a group of officers on an inspection tour of the troops in the forward areas. While this party was passing through territory held by Allied troops the enemy opened fire on an Australian position with machine guns and mortars. A mortar shell exploded in the midst of a group and wounded several soldiers. With complete disregard for his own safety Lieutenant Colonel Warmenhoven went through fire lanes which were covered by enemy machine guns to the allied position and gave medical treatment to the wounded men while mortar shells were still falling in the vicinity. He remained in this exposed front line position until all the wounded had received medical aid and were evacuated. Lieutenant Colonel Warmenhoven's heroism was an inspiration to the men who witnessed it."

Lieutenant Colonel Warmenhoven graduated from Marquette University School of Medicine, Milwaukee, in 1939.

BRAIN OPERATIONS PERFORMED WITHOUT DELICATE INSTRUMENTS

Capt. Joseph R. Strauss, formerly of Bridgeport, Conn., according to the Chicago *Daily News*, October 12, is reported to have performed two delicate brain operations within a month, without the usual surgical instruments and without even proper sterilization of equipment, on an American quartermaster corporal and an Australian infantryman. After Japanese bombers struck the base at Tsili Tsili some time ago the Australian infantryman was found unconscious with brain tissue exuding from his right temple. He was in absolute medical shock. After giving him 250 cc. of blood plasma Captain Strauss and his assistant cared for 18 other wounded men and then gave the Australian two more plasma injections. An operating table was then erected made from a stretcher covered by a brown army blanket and held up by four pronged sticks. Light came from three pulsating bulbs suspended from jungle branches and fed by a portable electric generator. Only an intravenous anesthetic was used. Captain Strauss is reported to have stated: "We didn't have enough clamps, and it was cut and tie and cut and tie. We cleaned out the wound as best we could, removing dirt and shrapnel particles; and after packing the wound with sulfa we sewed it up. We put him to bed in a tent. Three of my boys stayed with him all night. They held him when he grew restless. The patient showed no temperature after three days and was sent back from the dressing station to a hospital, where he is now recovered and has all of his reflexes." Details of the other operation were not given in the item. Captain Strauss graduated from Cornell University Medical College in 1935.

ARMY PERSONALS

Major Gen. Norman T. Kirk, Surgeon General of the Army, gave an address on "Current Plans and Policies of the Medical Department" at the Army Medical Center, September 20, before officers of the Medical Department residing in the District of Columbia and vicinity. This was the first fall meeting, and officers of the Navy and U. S. Public Health Service also were invited. More than six hundred officers attended the meeting. Col. Raymond L. Scott, M. C., also addressed the meeting on "Experiences with an Evacuation Hospital in the North African Theater."

Col. Carroll D. Buck, formerly commanding officer at the Fitzsimons General Hospital, Denver, was recently appointed to be in charge of the Denver Medical Depot, according to an announcement made by the War Department and published in the Denver *Fur News*. Colonel Buck, who left Denver in 1939, has been in charge of the Medical Depot at a Pacific Coast port of embarkation.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

INTERNSHIPS AND RESIDENCIES

The following letters are being sent out by the Procurement and Assignment Service for Physicians, Dentists and Veterinarians to the deans of medical schools and to hospital superintendents. When the new intern-resident program takes effect on Jan. 1, 1944 a reshuffling of interns and residents among hospitals in the country will become necessary. At the request of the Procurement and Assignment Service and of the War Participation Committee of the American Medical Association, THE JOURNAL will devote space to a record of the needs of hospitals for interns and residents and of the needs of interns and residents for places so as to enable the most rapid action possible regarding the filling of vacancies. The letters follow.

To Deans of Medical Schools:—

When the new intern-resident program begins, Jan. 1, 1944, some senior students will be unable to take internships in hospitals where they already have been accepted, since the quota of interns for some hospitals will be lowered.

This means that they will have to seek internships elsewhere. There will appear in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION weekly lists of hospitals with internship vacancies.

Will you call this to the attention of those seniors whose internships have been revoked so that they may make immediate application to hospitals with vacancies?

It would be helpful also if you and your intern committee would assist these men in selecting and finding new internships. It is unfortunate that this situation exists, but the transition to the nine months internship program necessitates carrying out this procedure.

To Hospital Superintendents Accredited for Internships and Residencies:—

When the new intern-resident program goes into effect on Jan. 1, 1944 the quotas which have been established by the Procurement and Assignment Service will result in changes in the numbers of interns and residents which each hospital may retain.

Certain hospitals will be authorized more interns and residents than have been appointed. Others will have to release interns who have already signed contracts.

It is suggested that hospitals needing interns and residents to fill quotas assigned to them should submit their needs to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for publication in the next issue. Interns and residents not now assigned to duty or relieved of assignments will then be able to communicate with the hospitals listed in THE JOURNAL who need their services.

This procedure will expedite the employment of interns and residents up to the limit of quotas assigned.

MISCELLANEOUS

FOOD RATIONING IN WARTIME

Recommendations of the National Research Council

In THE JOURNAL, October 16 (p. 442), the recommendations of the Subcommittee on Medical Food Requirements of the National Research Council regarding extra rations for sick persons were published. Attention is called to the following additional recommendation of the subcommittee:

BURNS AND GASTROINTESTINAL LESIONS

Recognizing that hypoproteinemia is a frequent consequence of obstructive gastrointestinal lesions, high intestinal fistulas and severe burns and that correction of the protein deficiency may be a critical factor in promoting the recovery of patients with these conditions, the subcommittee makes the following recommendation:

Patients who have undergone operations on their stomach, intestine or colon for ulcers or cancer, those with high intestinal fistulas and those convalescing from severe burns should be allowed, per week, meat, including fish and poultry, 64 ounces; milk, 7 quarts, and seven eggs. Certification in these cases should be renewed at sixty day intervals.

CORRECTION

In the previously published recommendation on Evaporated Milk and Frozen Foods for Hospitals, the following correction should be made: "Amendment 11.6 of Ration Board No. 5" should read "Section 11.6 of General Ration Order No. 5."

BRITISH HOSPITAL SHIP NEW FOUNDLAND BOMBED NEAR SALERNO

Three nurses of the Michael Reese Hospital Unit, Chicago, were awarded the Purple Heart for injuries received when the British hospital ship *New Foundland* was bombed off the Salerno beaches, September 13, according to an item in the Chicago *Daily News*, October 6. Miss Gertrude Mills of Chicago was slightly injured when fire aboard the ship caused the crew to lose control of the davits and her boat fell into the water, and two sisters from Oakland, Ill., Madonna and Agnes Nolan, who were sleeping in the same cabin when the bomb struck, had eardrum injury. Six British nurses and seventeen other persons were killed by the direct hit. Following the bombing the ship was abandoned, and the nurses were immediately transported to Bizerte, where they were refitted with clothes and equipment and prepared for another shot at Italy. Their final trip to the Salerno beachhead was made aboard an infantry landing craft which rolled and pitched throughout the two day trip. Helen Wharton of Iowa City, chief nurse of the group who managed it through its ordeal, stated "All we had to eat was K-ration, and nobody ate very much of that. Fifty per cent of us were hanging on to the rails at one time or another. It was pretty bad."

SERVICE MEN ABROAD ADVISED NOT TO BRING PARROTS BACK TO THE UNITED STATES

In a recent release from the Department of the Interior, Washington, D. C., Secretary of the Interior Harold L. Ickes advised that service men abroad refrain from bringing back to the United States parrots and other members of the family which may be infected with psittacosis. Birds of the parrot family include, besides parrots themselves, Amazons, Mexican double heads, African grays, cockatoos, macaws, parrakeets, lovebirds, lories, lorikeets and similar birds. Maryland, New York, Connecticut, Florida and the cities of Baltimore and Pittsburgh prohibit the importation of all species of parrots under any circumstances; they cannot be brought in even for scientific purposes. Parrakeets or lovebirds may not be imported into California, Maine, Minnesota and Oregon, in addition to the other states listed. According to Talbot Denmead, in charge of the Importations and Permits Section, Fish and Wildlife Service, Chicago, it is necessary to have a federal permit for the importation of any wild bird or animal.

PRISONERS OF THE JAPANESE

According to the Cortland (N. Y.) *Democrat*, word had been received that Dr. and Mrs. Frederick Scovel and their five children will be among the prisoners of war to be exchanged with the Japanese when the exchange ship *Gripsholm* makes the next trip. Dr. Scovel graduated from Cornell University Medical College, New York, in 1929 and for many years has been engaged in medical missionary work in China.

ORGANIZATION SECTION

OFFICIAL NOTES

AMERICAN MEDICAL ASSOCIATION BOARD OF TRUSTEES, MEETING OF SEPT. 16-17, 1943

A two day meeting of the Board was held, preceded by a full day meeting of the Executive Committee. Some of the matters acted on are reported here; others will be discussed at later meetings.

RADIO BROADCASTING

The Board authorized the resumption of the Association's broadcast "Doctors at War" on November 1, to continue for twenty-six weeks.

APPOINTMENT TO COUNCIL ON PHARMACY AND CHEMISTRY

Dr. Eugene M. Landis was elected to succeed Dr. William C. Rose (resigned) on the Council on Pharmacy and Chemistry.

COMMITTEE ON STUDENT HEALTH

The resignation of Dr. A. V. Bock from the Committee on Student Health, because of being heavily burdened with work, was accepted.

COMMITTEE AND COUNCIL REPORTS

A report from the Council on Medical Service and Public Relations was received and placed on file, as was also one from the Central Committee for Wartime Graduate Medical Meetings. The Board authorized the publication of a report of the Committee on Postwar Medical Services.

ENLARGEMENT OF ADVISORY COMMITTEE OF COOPERATIVE MEDICAL ADVERTISING BUREAU

Dr. Stanley B. Weld, Hartford, Conn., and Dr. E. M. Shanklin, Hammond, Ind., were elected to the Advisory Committee of the Cooperative Medical Advertising Bureau.

APPOINTMENT OF REPRESENTATIVES

Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals, was appointed to represent the American Medical Association on the Special Committee on Accrediting of the National League of Nursing Education.

Dr. Morris Fishbein was appointed to serve as representative of the American Medical Association on the Joint Committee on Indexing and Abstracting of the American Library Association.

Dr. Alton Ochsner, New Orleans, has been selected to represent the American Medical Association at the Primer Congreso Mexicano de Cancer Segunda Medica de Occidente to be held in Guadalajara, Jalisco, Mexico, the first week in November.

LEGISLATION

The Bureau of Legal Medicine and Legislation was instructed to call attention in its bulletin to bill H. R. 2985, which provides for the garnishment of wages and salaries of civil employees of the United States.

SCIENTIFIC EXHIBITS

An appropriation was made for scientific exhibits for the last quarter of the current year.

Drs. Ludvig Hektoen and Urban Maes were elected to succeed themselves on the Committee on Scientific Exhibits for a period of three years.

1944 SESSION OF ASSOCIATION

The week of May 21 was selected for the next annual session of the Association, provided it is deemed propitious to hold a meeting next year.

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations will be held at the offices of the American Medical Association at 535 North Dearborn Street, Chicago, on Nov. 19 and 20, 1943. The first session of the conference will be convened at 10 a. m. Friday, November 19, and an afternoon session will be held on that day. On Friday evening a program designed to be of particular interest to the editors of the constituent state medical association journals will be presented at the Palmer House. The concluding session of the conference will be held at the offices of the Association on the morning of Saturday, November 20.

It is expected that this conference will be attended by all the secretaries and editors of the constituent state medical associations, by other officers of the constituent state medical associations and by officers of component county medical societies who may wish to attend. Members of the Association will be cordially welcome.

It is important that railroad and hotel accommodations be reserved immediately.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—A public hearing has been scheduled by the House Committee on the Judiciary on H. R. 786, the Tolan bill to permit chiropractors to treat the beneficiaries of the United States Employees' Compensation Act. The hearing will be before subcommittee No. 2 of the Committee on the Judiciary, Nov. 3, 1943, at 10:30 a. m. Representative Weaver of North Carolina is chairman of the subcommittee, and the other members are Representative Byrne of New York, Representative Cravens of Arkansas, Representative Reed of Illinois, Representative Towe of New Jersey and Representative Jennings of Tennessee.

H. R. 2970 has been reported to the House of Representatives with the recommendation that it pass, providing that during the present war and for six months thereafter the superintendent and all other members of the Navy Nurse Corps entitled under existing law to relative rank shall have and shall be designated by the rank which corresponds to the relative rank heretofore provided by law for such superintendent and members.

Bills Introduced.—H. R. 3427, introduced by Representative Maas, Minnesota, provides dispensary treatment and hospitalization in Army and Navy hospitals for retired enlisted men of the Army, Navy, Marine Corps and Coast Guard.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Memorial Fund for Dr. Wolfsohn.—A memorial fund has been set up at the Stanford University School of Medicine to honor Dr. Julian M. Wolfsohn, clinical professor of medicine (neuropsychiatry) at Stanford, who died July 1. The fund will be used by the school of medicine especially for neurology and psychiatry and will honor Dr. Wolfsohn, who had been a member of the staff since 1913. The fund was contributed by friends of the late physician.

Chiropractor and Osteopath Sentenced for "Careless Tonsillectomy."—A chiropractor and an osteopath were sentenced to two years in prison on August 17 for conspiracy to violate the medical practice act, according to the Los Angeles *Daily News*. Their retrial on manslaughter charges was ordered by the court following the deaths of 2 children from what was described as "careless tonsillectomy." Harry Navarre is the chiropractor and Leslie R. Nunn the osteopath, it is reported.

Hamilton Anderson Released by Japanese.—Dr. Hamilton H. Anderson, professor and head of the department of pharmacology at Peiping Union Medical College, Peking, is one of a group of persons announced by the state department as repatriated by the Japanese. The newspaper report, October 14, indicated that Dr. Anderson was aboard a Japanese liner en route to Portuguese India. Prior to his joining the Peiping Union Faculty, Dr. Anderson had been in charge of graduate education in the Council on Medical Education and Hospitals of the American Medical Association. Before joining the Association he had served as assistant clinical professor of pharmacology at the University of California Medical School, San Francisco.

CONNECTICUT

Vesalius Celebration.—On October 30 the Yale Medical Library will present the following program to observe the 400th anniversary celebration of the publication De Humani Corporis Fabrica, by Vesalius:

Ernst A. Cassirer, Ph.D., New Haven, The Philosophical Character of the Science of the Renaissance.
Dr. Edward C. Streeter, Stonington, Vesalius at the University of Paris.
Carl P. Rollins, M.A., New Haven, Oporinus and the Fabrica.
Dr. Arturo Castiglioni, Baltimore, The Attack of Putnus on Vesalius and the Defense by Cuneus.

During October the library has on display a Vesalian exhibit drawn from the collection bequeathed to Yale by the late Dr. Harvey Cushing. At the time of his death he was engaged on the compilation of a definitive biobibliography of Vesalius, which is now in press and is being published under the auspices of the Historical Library by Mr. Henry Schuman, New York.

Psychologist Named Research Director for Public Welfare Council.—Karl F. Heiser, Ph.D., director of the psychology laboratory at Norwich State Hospital, Norwich, has been appointed research director for the state public welfare council. One of Dr. Heiser's first activities will be to assist in the study of Connecticut's aged infirm and chronically ill. A committee of the Connecticut State Medical Society will participate in the study, which, according to newspaper reports, is to start sometime during October. The report stated that this problem was given some attention about three years ago by a special state commission headed by Dr. Creighton Barker, New Haven, executive secretary of the state society. The commission reported at that time that there was "no statistical evidence available that will permit any reasonably accurate statement of the costs to the state of those people who are 60 years of age or more who have, through state funds, received hospital and medical care because of chronic illness." One of the aims of the new study is to determine whether there is a need for a separate state institution to take care of such cases. Dr. Heiser has been granted leave of absence from his state hospital position to carry on the study.

ILLINOIS

Grant for Poliomyelitis Study.—The National Foundation for Infantile Paralysis has granted $10,325 to the Illinois Committee on Infantile Paralysis to study the persistence of the virus of poliomyelitis in stools of convalescent and healthy carriers, for investigation of the port of entry and exit of poliomyelitis in acute cases, and for the correlation of neuropathologic and clinical findings in cases of poliomyelitis during an acute outbreak. Dr. Edward A. Piszczek, Chicago, director of health of Cook County, is chairman of the Illinois Committee on Infantile Paralysis.

Conrad Sommer Heads New Mental Hygiene Section.—Dr. Conrad S. Sommer, chief medical officer in the department of public welfare, has been named deputy director of the mental hygiene service, a newly created position. The new post is one of three created by the department of public welfare in a reorganization to coordinate activities. Dr. Sommer, in his new capacity of deputy director of the mental hygiene section, will supervise the twelve mental hospitals, the Neuropsychiatric Institute, the division of veteran service and the bureau of home economics and nutrition. Wallace W. Clark, formerly superintendent of the division of public assistance and recently assistant regional director of the federal office of community war services for the states of Wisconsin, Indiana and Illinois, has been named deputy director in charge of the section of social services, covering all nonmental institutions operated by the department and also the division of child welfare, the division of services for the physically handicapped, the division of visitation of adult blind, the Institute for Juvenile Research, the division of delinquency prevention and the division of rehabilitation of women and girls.

Chicago

Koessler Fellowship Awarded.—Maurice R. Hilleman, B.S., has received the Jessie Horton Koessler Fellowship, carrying a stipend of $500, according to an announcement from the Institute of Medicine of Chicago. The 1943-1944 fellowship will enable Mr. Hilleman to work with Dr. Francis B. Gordon in the Ricketts Laboratory in the University of Chicago on the immunologic relations on the psittacosis-like viruses.

The D. J. Davis Lectureship on Medical History.—On October 15 Jens Christian Bay, librarian, John Crerar Library, gave the first address under a new lectureship established by friends and colleagues of Dr. David J. Davis, who retired this year as dean of the University of Illinois College of Medicine. The lecture fund was formally presented to the university on this occasion and will be known as the D. J. Davis Lectureship on Medical History. The title of the first lecture was "A Prelude to Medical History."

Personal.—Everett W. Jones has been named vice president of the Modern Hospital Publishing Company, effective November 1; Mr. Jones, who is head hospital consultant in the governmental division of the War Production Board and director on leave of Albany Hospital, Albany, N. Y., will for the present in his new position concentrate on problems involving the Hospital Yearbook and Latin American publications.——Raymond M. Hilliard, LL.B., executive secretary of the Illinois Aid Commission, announced that his title is now public aid director.

Regional Meeting of College of Physicians.—On October 16 the American College of Physicians sponsored a regional meeting at the Drake Hotel, Chicago, in conjunction with the postgraduate course in endocrinology, October 11-16, and the wartime graduate medical meeting at the United States Naval Hospital, Great Lakes, Ill., October 15. The session was for the states of Illinois, Indiana, Iowa, Michigan and Wisconsin. Among the speakers were:

Lieut. Col. Ford K. Hick, M. C., A. U. S., The Application of Graphic Training Aids to Medicine.
Dr. Robert M. Moore, Indianapolis, Effort Syndrome in Soldiers.
Capt. James E. McFarling, M. R. C., Personal Experiences in New Caledonia with Special Reference to Malaria.
Lieut. Col. Frank Dennette Adams, M. C., A. U. S., Some Clinical Observations on Meningococcic Infection.
Brig. Gen. David N. W. Grant, M. C., U. S. Army, Aviation Medicine.
Dr. Andrew C. Ivy, Bethesda, Md., Recent Observations of Practical Significance on Gastric Secretion.
Dr. Fuller Albright, Boston, Classification of Hypoestrinism.
Dr. Ovid O. Meyer, Madison, Wis., Some Aspects of the Diagnosis and Therapy of Hypochromic Anemias.

INDIANA

State Medical Election.—Dr. Neslen K. Forster, Hammond, was chosen president-elect of the Indiana State Medical Association at its meeting in Indianapolis in September. Dr. Jacob T. Oliphant, Farmersburg, will take office as president of the association on Jan. 1, 1944. Dr. Carl H. McCaskey, Indianapolis, is now president of the association.

Division of Tuberculosis Control Created.—The Indiana State Board of Health has established a tuberculosis control division to coordinate the work in the state against tuberculosis. Dr. Holland Thompson, Montgomery, Ala., director of tuberculosis control for the state of Alabama, has been named director of the new division. At present all tuberculosis control activities of the state board of health are administered by the communicable disease division.

Academy of Medicine Formed.—Articles of incorporation have been issued for the Evansville Academy of Medicine, Inc., which has been organized by local physicians who are members of the Vanderburgh County Medical Society, according to the Evansville *Courier*, September 28. Dr. Stanton L. Bryan, Charles C. Sutter and Robert R. Acre have been named the incorporators. First members of the board of directors will be Drs. Keith T. Meyer, William M. Cockrum, William Lawrence Daves, Henry J. Faul, Daniel Tweedall, Pierce MacKenzie and James Y. Welborn. The academy plans to purchase a suitable building which will house an auditorium for lecture purposes, kitchen and other facilities. There will also be offices for the academy officers and directors and a permanent secretary in addition to headquarters for the county medical society and the Evansville and district dental societies.

IOWA

New Director of Tuberculosis Control.—Dr. Leon H. Flancher, epidemiologist, division of preventable diseases (tuberculosis control), Minnesota Department of Health, has been appointed director of the division of tuberculosis control of the Iowa State Department of Health. Dr. Flancher graduated at the Milwaukee Medical College in 1910.

MAINE

State Society Votes to Hold 1944 Meeting.—On August 1 the council of the Maine Medical Association voted to resume the scientific session of the association in 1944. The meeting was omitted in 1943, although a meeting of the house of delegates convened. The vote of the council was taken after a return from questionnaires sent to all members of the association showed 58 per cent in favor of a return to the former custom.

MICHIGAN

State Medical Election.—Dr. Andrew S. Brunk, Detroit, was chosen president-elect of the Michigan State Medical Society at its meeting in Detroit in September and Dr. Claude R. Keyport, Grayling, was installed as president. The society voted to reject the plan set up by the Children's Bureau for the care of wives and infants of enlisted men on the ground that the plan "is a clearcut case of government subsidy of the services of a doctor," newspapers reported.

Appointments for Proposed Medical Science Center.—The plan to develop a $50,000,000 medical center at Wayne University College of Medicine, Detroit, now takes shape with the announcement of definite appointments for the program. The board of trustees of the Wayne University College Hospital was incorporated on August 17. Members of the board include Mr. Alex J. Groesbeck, Mr. B. Edwin Hutchinson and Dr. A. William Lescohier chosen by the board of education of Detroit, and Mr. Wendell W. Anderson, Mr. Frederick J. Gartner and Dr. J. Milton Robb chosen by the Wayne County Board of Education. Dr. Edgar H. Norris as dean of the college of medicine is the seventh member. Dr. Frank F. Tallman, Lansing, director of mental hygiene of the Michigan State Hospital Commission, has been assigned by the commission to the Wayne Medical Science Center as adviser and consultant to the board and in the development of its Industrial Health Institute and psychiatric units. The industrial institute will not be for physicians alone. It will help anybody who deals with people, it was announced, concerning itself with plant morale, human relationships within the plant, pointing the way to relate the man harmoniously with his job. One of the first units to be built by the state near Detroit will be a 2,500 bed mental hospital to serve Wayne County. The center will maintain a neuropsychiatric and a percommitment clinic in its medical hospital. The initial handling of patients will be in the outpatient department, where an attempt will be made to cure without hospitalization. George F. Pierrot, director of the United Service Organizations in Metropolitan Detroit for the past seventeen months, has been appointed executive secretary of the finance committee for the proposed medical science center. Newspapers recently reported that an appropriation of $10,000 to initiate plans for the development of the center at Wayne University had been approved by the ways and means committee of the county board of supervisors. The selection of a site by the committee on buildings and grounds is now under consideration and will probably be decided by November 1. The plan includes a $2,000,000 hospital and other center units, which will be operated by the Wayne University College of Medicine. Complete details have not been announced for the progress of the center, but it is hoped that this development will expand available facilities for the treatment of indigent and mental patients as well as establish a center for the study and prevention of industrial accidents and occupational diseases.

NEW HAMPSHIRE

The Mayo Lecture.—The first W. J. and C. H. Mayo Memorial Lecture will be delivered at Dartmouth Medical School, Hanover, November 4, instead of November 5, according to an announcement from the university. The talk will be presented by Capt. Winchell M. Craig (MC), U. S. Naval Reserve, chief surgeon, Naval Hospital, Naval Medical Center, Bethesda, Md., on "Warriors Against Disease" (THE JOURNAL, October 9, p. 365).

NEW YORK

Personal.—Dr. George D. Winchell, coroner of Wayne County for more than twenty years, was honored by the Wayne County Medical Association recently in recognition of his completion of fifty years in the practice of medicine.——Dr. William E. Mosher Jr., Cortland, has resigned as health commissoner of Cortland County to enter the armed services.——In August the Albany *Times-Union* named Dr. Edward F. Urba, Kinderhook, as its "hero of the month." According to the state medical journal Dr. Urba, despite the lack of proper surgical equipment, amputated the leg of an engineer trapped in a swaying locomotive during a derailment at Chatham. The presentation of a $25 war bond is the method used by the *Times-Union* of "honoring unsung heroes on the home front."

New York City

Postgraduate Talks.—Dr. Harvey B. Matthews, Brooklyn, will discuss "Causes and Management of Prolonged Labor" before the Suffolk County Medical Society, October 27. The talk is a part of the graduate instruction provided by the Medical Society of the State of New York in cooperation with the state health department. On October 21 the two groups sponsored a symposium on "Meningococcic Meningitis" before the Madison County Medical Society. Speakers were Drs. John Howard Ferguson and Abraham Clement Silverman, Syracuse.

Dr. Brill Named 1943 Salmon Lecturer.—Dr. Abraham A. Brill, formerly lecturer in psychoanalysis and abnormal psychology at New York University and now lecturer in psychoanalysis and psychosexuality, Columbia University, will deliver the Salmon Lectures for 1943 at the New York Academy of Medicine, November 5, 12 and 19. Dr. Brill will speak on "The Psychoanalytic Contribution to Psychiatry." Individual topics will be "The Psychiatric Scene of 1900," "The Origin and Development of Interpretative Psychiatry" and "Freud's Specific Contributions to Knowledge of Psychosis."

Rehabilitation Clinic Opened at Lenox Hospital.—On October 7 Lenox Hill Hospital opened a rehabilitation clinic to provide needed psychiatric help for men rejected at induction or discharged from the armed forces on psychiatric grounds. The clinic is similar to one established at New York Hospital and is under the direction of Dr. Thomas K. Davis with Dr. Johan H. W. van Ophuijsen, attending psychiatrist, in charge. Work is being done by the neuropsychiatric staff assisted by a group of volunteer psychiatric social workers and secretaries, sessions beginning at 7:30 each Thursday evening. According to an announcement, although the therapeutic aspect will be stressed, clinical and statistical research will not be neglected, as this appears to hold promise of the possible solution of postwar problems.

OHIO

Memorial for Physician.—Members of the Gallia County Medical Society are sponsoring a fund for the beautification of the Gallipolis City Park as a memorial to the late Dr. George G Kineon, medical director and superintendent of the Ohio Hospital for Epileptics. Dr. Kineon was president of the park planning commission.

Personal.—Dr. Jay McLean, formerly with the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, has been appointed associate professor of surgical research at the Ohio State University College of Medicine, Columbus, where he will continue his work on heparin.——Dr. Edward J. McCormick has resigned as president of the Toledo Board of Health. Dr. McCormick recently moved from Toledo to the Village of Ottawa Hills, thus making him ineligible to continue on the board.

Mass Chest X-Ray Examinations.—What is being claimed to be "the greatest mass chest x-ray examination for tuberculosis ever attempted among industrial workers in the United States" is being undertaken in Cleveland under the supervision of Dr. Joseph B. Stockden, tuberculosis controller of Cuyahoga County, and local health commissioners, and with the cooperation of the Anti-Tuberculosis League and the support of the Cleveland Academy of Medicine, the state medical journal announces. The survey crew, working with a portable high

speed fluorographic unit lent by the U. S. Public Health Service, expects to visit every major war plant in Greater Cleveland. Support for the survey has been pledged by local labor organizations. X-ray examination of the chest will be given free on a voluntary basis to every plant worker. The reports will be confidential and will be given only to the worker or, on his request, to his private physician. Company physicians will not have access to these reports, according to the state journal.

PENNSYLVANIA

Physician Celebrates Ninety-Fifth Birthday.—Dr. Joseph H. Shull, physician and attorney of Stroudsburg, observed his ninety-fifth birthday on August 17. Newspapers report that Dr. Shull was elected to the state senate in 1886, serving until 1890. In 1904 he went to Congress for a term. He is still in active practice.

State Medical Election.—Dr. William Bates, Philadelphia, was chosen president-elect of the Medical Society of the State of Pennsylvania at its meeting in Philadelphia in October. Dr. Augustus S. Kech, Altoona, was installed as president. Dr. Walter F. Donaldson, Pittsburgh, was reelected secretary and Dr. Henry G. Munson, Philadelphia, assistant secretary.

Philadelphia

Annual Postgraduate Institute.—The Philadelphia County Medical Society announces that it will hold its ninth annual Postgraduate Institute May 2-5, 1944. The theme of the institute will be "Modern Diagnosis and Treatment."

The Mütter Lecture.—Dr. Virgil H. Moon, professor of pathology, Jefferson Medical College of Philadelphia, will deliver the Thomas Dent Mütter Lecture of the College of Physicians of Philadelphia, December 1. His subject will be "The Dynamics of Shock as Related to Clinical Problems." The college cooperates with the Philadelphia County Medical Society in this annual series of lectures. On November 10 Brig. Gen. Fred W. Rankin, M. R. C., will lecture in this cooperative series on "Peptic Ulcer in the Army."

SOUTH CAROLINA

Changes in Health Officers.—Dr. Benton M. Montgomery has been named director of the Clarendon County Health Department, succeeding Dr. Edward Alex Heise, who is now in charge of the Sumter County and City health departments. Dr. Montgomery is also director of the Williamsburg County Health Department, according to the state medical journal.

TEXAS

University News.—The University of Texas Chapter of Phi Beta Pi Fraternity has given funds to the University of Texas Medical Branch, Galveston, to establish an annual lectureship. The medical school announces the publication of Texas *Reports on Biology and Medicine*, a quarterly scientific periodical available without charge to the libraries of medical institutions throughout the world.

Personal.—Mr. Lawrence R. Payne, superintendent of the Hillcrest Memorial Hospital, Waco, has been named administrator of Baylor University Hospital, Dallas, effective October 15. Mr. Payne, before taking over his Waco position, had served six years as assistant superintendent to the Baylor Hospital.——Dr. Tilman E. Dodd, Bryan, has resigned as health officer of the Bryan-Brazos County Health Unit.——Dr. John Schreiber, San Augustine, has been named health officer of Nolan County.

UTAH

Personal.—Dr. Rodger J. B. Hibbard, formerly clinician and pathologist at the Arkansas Tuberculosis Sanatorium, State Sanatorium, has been chosen superintendent of the Utah State Tuberculosis Sanatorium, Ogden, effective October 5, succeeding Dr. Edward J. Nagoda, resigned.

Public Health Election.—E. H. Bramhall, B.S., director of the division of laboratories of the state board of health, was chosen president-elect of the Utah Public Health Association at its annual convention, September 25, in Salt Lake City and Dr. Hyrum L. Marshall, professor of physical welfare at the University of Utah School of Medicine, was inducted into the presidency.

Hospital News.—Ground was broken for a five story addition to St. Mark's Hospital, Salt Lake City, September 8. The new wing will increase the number of beds by 75 and will also supply additional operating theaters and service rooms for the entire hospital, which at present has a capacity of 225 beds. The new addition is expected to cost about $400,000, $100,000 of which will be paid by the hospital, the federal government providing the remainder.

WASHINGTON

Personal.—Dr. Cecil R. Fargher, Vancouver, health officer of the Clark County Health Unit, has been named director of health of Tacoma.——Dr. Claire W. Twinam, acting superintendent of the Lakeville State Sanatorium, Middleboro, Mass., has been appointed medical director of the King County Tuberculosis Hospital.

Spokane Medical Society Named in Affidavit.—On September 11 an affidavit was filed in the superior court in Spokane charging members of the Spokane County Medical Association with agreeing not to testify against a fellow member or to cooperate in the preparation of a malpractice suit against a member. According to the Spokane *Spokesman* the affidavit alleged that Dr. Clyde W. Countryman and all members of the Spokane Medical Association have agreed not to testify against a fellow member. The affidavit is on behalf of Earl H. Odion and is based on the death of Mrs. Helen Odion in childbirth. The action followed a defense motion for dismissal on the ground that the plaintiff failed to file a bill of particulars for a year, it was stated. The suit asked damages of more than $50,000.

WEST VIRGINIA

State Society Plans 1944 Meeting.—The West Virginia State Medical Association announces that its seventy-seventh annual meeting will be held at the Hotel Windsor, Wheeling, May 15-16, 1944.

Symposium on Obstetrics.—The Kanawha Medical Society was host to the sixth councilor district at a symposium on obstetrics in Daniel Boone Hotel, Charleston, October 12. Dr. Harry Hudnall Ware Jr., professor of obstetrics at the Medical College of Virginia, Richmond, was the principal speaker on "Management of Breech Presentations" and "Ectopic Pregnancy."

Resolution Stipulates Granting of Temporary Licenses to Practice.—On September 30 the council of the West Virginia State Medical Association adopted a resolution recommending to the public health council that it grant temporary permits from one meeting to its next succeeding meeting to such graduates from unrecognized schools as may be necessary to supply areas in which there might exist an acute shortage of doctors, such permits to be issued on the following conditions:

That actual local need be demonstrated to the complete satisfaction of the public health council.

That such graduates of an unrecognized school be given a permit to practice only as an assistant to some individual licensed physician, who shall be his sponsor and who shall be responsible for all professional acts of such a graduate.

That he demonstrate to the satisfaction of the public health council his knowledge of all branches of medicine and surgery, and proficiency in the use of the English language.

That such applicant for a temporary permit to practice agrees to follow and abide by such restrictions and regulations as the public health council sees proper to impose; and

That in no case whatever shall such license to practice be granted or renewed for a period in excess of six months after the cessation of hostilities.

The resolution reflected the cognizance of the society that there is an insufficient number of physicians in certain communities in the state, especially in industrial areas, to provide the civilian population with adequate or necessary medical service. Indicating that it does not desire to have the standards for medical licensure set by the public health council lowered for permanent licensure in any manner whatever, the resolution and its recommendations stipulate the basis for utilizing graduates of schools not recognized by West Virginia standards for permanent licensure.

WISCONSIN

Clinic Against Whooping Cough Proposed.—Dr. Thaddeus D. Smith, Neenah, post surgeon, was appointed as chairman of a committee to organize a clinic for immunization against whooping cough at a meeting of the Veterans of Foreign Wars, Nicolet Post 2126, Neenah, September 27.

Personal.—On September 17 Acting Governor Goodland appointed Dr. Erwin R. Schmidt, Madison, to the Soldier's Rehabilitation Board to succeed Col. William S. Middleton, M. C., A. U. S., who is on leave of absence as dean of the University of Wisconsin Medical School, Madison. Dr. Schmidt is chief surgeon at the State of Wisconsin General Hospital.

GENERAL

Prizes on Endocrinology.—Elizabeth L. Brown, class of 1943, New York Medical College, Flower and Fifth Avenue Hospitals, recently was presented with first prize in the Schering Award Competition for 1942 for her work on "Endocrines and the Nervous System." First prize consists of one full year's tuition. Second prize, consisting of one-half year's tuition, went to Eugene B. Brody, class of 1944, Harvard Medical School, Boston, for his paper on "Hormone Factors in Personality." Third prize of $100 was given to Roslyn Wiener, class of 1945, University of Michigan Medical School, Ann Arbor, for work entitled "Role of Hormones in Pregnancy and Parturition." The awards were established in 1941 by the Schering Corporation for the best original papers on endocrinology.

Hospital Service Society Sued by Government.—On September 17 the government filed a civil suit in district court in Washington, D. C., to declare the charter of the National Hospital Service Society, Inc., forfeited because of alleged violations of the charter terms, according to the Washington *Star*. Under the terms, it was stated, the society was to operate as a "fraternal beneficial association" for the sole benefit of its members. The government has charged the corporation has violated the charter through operating for profit and not for the sole benefit of its members, it was stated. The government also alleged the society has been governed by other than a representative form of government, contrary to the charter. It was also stated that the government had asked the court to appoint a receiver and liquidate the affairs of the corporation, in the interest of some five thousand policyholders, nearly all of whom are in the distict, it was stated. The suit claims further that the society operated in Washington without a permit from the superintendent of insurance after May 1, 1940. Filed with the suit is an affidavit to show that the society was unsuccessful in court action to force the superintendent of insurance to issue it a permit after the 1940 date. The society was incorporated in Washington in August 1935, according to the suit.

Accommodations for Cardiac Patients.—There are 111 institutions in the United States which accept convalescent cardiac patients, according to an announcement of a survey made by the heart division of the New York Tuberculosis and Health Association. In making the announcement Dr. J. Burns Amberson, president of the New York Tuberculosis and Health Association, said that this is the first national list of such cardiac institutions compiled and that it is considered preliminary since it is believed that there are other institutions accepting cardiac patients which the survey was unable to discover. Of the 111 known institutions, 16 are located in New York State, 2 being in New York City. Illinois stands second with 14, Pennsylvania has 12 cardiac convalescent services, while New Jersey and Massachusetts each have 9. In all there are thirty states and the District of Columbia which have 1 or more institutions for the care of cardiac patients. As a result of the survey the American Heart Association has published a directory listing each of the 111 institutions with their admission requirements, bed capacity, facilities, medical supervision, rates and staff. It lists cardiac convalescent homes for children and adults, general convalescent homes which accept cardiac patients, private schools and camps accepting cardiac patients, facilities for foster home care for cardiac children, and general convalescent homes accepting cardiac children.

The Father of American Pharmacy.—The fifth painting in the "Pioneers of American Medicine" series, entitled "The Father of American Pharmacy," will be unveiled during National Pharmacy Week at a meeting in Philadelphia, November 5. The painting depicts William Procter Jr. (1817-1872) studying a formula for the standardization of drugs while at work with an assistant in his laboratory. Ivor Griffith, Ph.M., president of the American Pharmaceutical Association and president of the Philadelphia College of Pharmacy and Science, will be the principal speaker at the unveiling. Ensign Melba Grafius of the Waves, stationed at Annapolis, Md., will unveil the painting. She is the fifth youngest woman graduate pharmacist in Pennsylvania, having received her degree in June 1942. The series of "Pioneers of American Medicine" is being executed by Dean Cornwell and financed by John Wyeth and Brother. Other paintings in the series, which are lent to medical schools and medical societies, are "The Dawn of Abdominal Surgery," a tribute to Dr. Ephraim McDowell, depicting the world's first successful ovariotomy; "Beaumont and St. Martin," honoring Dr. William Beaumont, who pioneered in the study of the stomach's digestive functions; "Osler at Old Blockley," in honor of Sir William Osler, pioneer teacher of clinical medicine, and "Conquerors of Yellow Fever," a tribute to Drs. Walter Reed and Carlos Finlay, whose work made possible construction of the Panama Canal, vital wartime lifeline. Procter graduated at the Philadelphia College of Pharmacy in 1837. He later served as professor there. He edited the *American Journal of Pharmacy* and founded the American Pharmaceutical Association. His chief contribution was the standardization of drugs.

United States and American Republics Exchange Medical Knowledge.—Dr. Eugene P. Campbell of the health and sanitation division of the Institute of Inter-American Affairs, Washington, D. C., reports that medical men from the United States are enthusiastic about the training they are receiving in the republics to the south. Dr. Campbell is director of the United States missions assisting Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua in health and sanitation programs. The training program was established by the Association of American Medical Colleges, with the financial support of the John and Mary R. Markle Foundation in New York. When the physicians arrive in Central America they report to the heads of the respective medical missions from the United States. The visiting physicians work on tropical disease cases in hospitals for three weeks. At the end of this period they go out with a field party for a week or ten days, learning more about malaria, dysentery and other tropical diseases. "This program has given our doctors experience they would not obtain elsewhere," said Dr. Campbell. "It has given them something concrete. Many doctors in the United States have had little experience with tropical medicine, and this is a handicap to the Army." Dr. Campbell said that President Tiburcio Carias Andino of Honduras has been especially interested in the program. The exchange of physicians and technicians among the Americas is an important phase of the program of inter-American cooperation which resulted from the conference of American Foreign Ministers at Rio de Janeiro in January 1942. United States physicians who have finished or are receiving training in Central America are:

Dr. Carroll C. L. Birch, assistant professor of medicine, University of Illinois School of Medicine, Chicago, assigned to Golfito, Costa Rica.

Dr. Robert C. Lowe, assistant professor of medicine, Louisiana State University School of Medicine, New Orleans, to Quepos, Costa Rica.

Dr. Walter A. Stryker, instructor of pathology, University of Michigan Medical School, Ann Arbor, to Quepos.

Dr. Elberton J. Tiffany, assistant professor of bacteriology, Long Island College of Medicine, Brooklyn, to Tela, Honduras.

Dr. George T. Harrell Jr., associate professor of preventive medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, N. C., to Tela.

Dr. Roswell D. Johnson, instructor of pediatrics, Yale University School of Medicine, New Haven, Conn., to Tiquisate, Guatemala.

Dr. Robert A. Hettig, instructor of internal medicine, University of Michigan Medical School, to Tiquisate.

Dr. Lemuel W. Diggs, associate professor of medicine, University of Tennessee College of Medicine, Memphis, to Quirigua, Guatemala.

Dr. Thomas H. McGavack, associate professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, New York, to Tela.

Dr. William McK. German, assistant professor of pathology, University of Cincinnati College of Medicine, to Tela.

Dr. Floyd J. Fleischer, associate professor of public health, University of Colorado School of Medicine, Denver, to Quepos.

Dr. Harry F. Dowling, clinical professor of medicine, George Washington University School of Medicine, Washington, D. C., to Quepos.

Dr. Mario Muniz, professor of bacteriology and immunology, Georgetown University School of Medicine, Washington, to Golfito.

Dr. Russell J. Blattner, assistant professor of pediatrics, Washington University School of Medicine, St. Louis, to Tiquisate.

Dr. A. M. Fallis, demonstrator in preventive medicine, University of Toronto Faculty of Medicine, Ontario, to Tiquisate.

Dr. Wesley W. Spink, clinical associate professor of internal medicine, University of Minnesota Medical School, Minneapolis, to Quirigua.

Dr. Thomas P. Almy, instructor of medicine, Cornell University Medical College, New York, to Tela.

Dr. Carlton J. Casey, instructor of medicine, University of Virginia Department of Medicine, Charlottesville, to Tela.

Dr. Arthur L. Tatum, professor of pharmacology, University of Wisconsin Medical School, Madison, to Tiquisate.

Leslie C. Saunders, Ph.D., professor of parasitology, University of Saskatchewan School of Medical Sciences, Saskatoon, to Tiquisate.

Dr. Omar J. Fareed Jr., instructor in medicine, University of Chicago School of Medicine, to Quirigua.

Dr. Morris Tager, assistant professor of bacteriology, Yale University School of Medicine, to Quepos.

Dr. Paul A. Lembcke, instructor in medicine, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., to Quepos.

Dr. William W. Frye, associate professor of preventive medicine and public health, Vanderbilt University School of Medicine, Nashville, to Golfito.

Raymond W. Wilhelmi, assistant professor of zoology, University of Missouri, Columbia, to Tiquisate.

Dr. Howard B. Slavin, assistant professor of medicine, University of Rochester School of Medicine and Dentistry, to Tiquisate.

Dr. Robert M. Shaw, professor of bacteriology and hygiene, University of Alberta Faculty of Medicine, Edmonton, to Quirigua.

Dr. John W. Scott, associate professor of clinical medicine, University of Alberta Faculty of Medicine, to Tela.

Donald B. McMullen, D.Sc., associate professor of hygiene and public health, University of Oklahoma School of Medicine, Oklahoma City, to Tela.

Francis C. Lawler, professor of bacteriology, University of North Dakota, Grand Forks, to Golfito.

Dr. Henry E. Wilson Jr., associate professor of medicine, Ohio State University College of Medicine, Columbus, to Limon, Costa Rica.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 3, 1943.

Psychiatric Battle Casualties

The *Army Medical Department Bulletin* deals with the early recognition and treatment of psychiatric battle casualties. There is no fundamental difference between psychiatric cases arising during a battle and those occurring in civil life, but the former are often more sudden and dramatic: premonitory symptoms may have been entirely lacking or under the stress of battle may have been unobserved until the breakdown occurs. They are apt to be displayed in a more vivid and spectacular form. Rapid decisions may have to be made by the medical officer in a forward area, on which may depend the morale of a whole unit. Experience in the present war has shown the importance of early treatment. The incidence of psychiatric casualties depends to some extent on the nature of the action; it is likely to be higher during unsuccessful, purely defensive or unduly prolonged actions. A recent analysis of all casualties evacuated from the Libyan battle area showed that 2 per cent were psychiatric and another 8 per cent were cases of physical exhaustion, exhibiting transient neurotic features. The largest proportion of the psychiatric syndromes (60 or 70 per cent) were acute anxiety reactions. Hysterical reactions came next, and other forms of psychosis or neurosis were of less numerical importance. It should be remembered that, while the precipitating factor is the actual battle stress, more complex underlying causes may be present. These may lie in the individual or his environment—either in an unstable personality or in faulty morale or discipline.

The development of symptoms may be sudden and dramatic, but closer investigation will often reveal a series of changes which may have been developing over days, weeks or even months. One of the earliest and most typical symptoms is a change in temperament. The quiet retiring individual becomes garrulous and vivacious, or the good humored and sociable man becomes morose and sullen. Increased indulgence in alcohol or tobacco is common. Emotional instability is often manifest—sudden outbursts of weeping without apparent cause or sudden aggressiveness or even violence. Disciplinary offenses may occur in a person of previously exemplary character. There is often deterioration in the standard of work and efficiency. The individual may be irritable and jumpy, unduly startled by a sudden noise. Headache and a wide variety of psychosomatic symptoms may be in evidence.

In prophylaxis, full knowledge of the men in his unit by the medical officer is important; early recognition of the premonitory symptoms may help him to avert a breakdown. Unfortunately he is often confronted with a fully developed case from another unit. Prophylaxis takes three forms: 1. Administrative. Training and discipline are of course the responsibility of the combatant officer, but the medical officer may by his advice contribute much of value to the morale of the individual and of the unit. 2. Psychologic. Listening followed by frank discussion with the individual and simple psychotherapy—explanation, reassurance and suggestion—may avert an impending breakdown. 3. Psychic. Rest, adequate food and sedatives are important.

It is important to avoid indiscriminate evacuation of personnel to the rear. If a patient can be treated in a forward area, the prognosis as a rule is better. But delay in evacuating men for whom specialized treatment in a base area is necessary may prove disastrous to the patient and harmful to the unit. The physically exhausted should be evacuated to a rest camp or casualty clearing station. Treatment on simple lines should ensure return to duty in a few days. In simple terror states the great majority respond to firm handling with a sedative and restorative hot drinks. If response is delayed, probably the condition is more serious, such as hysteria or a developing anxiety state, and evacuation for more specialized treatment is generally necessary. The main aim is to provide adequate mental and physical rest; for the acute neurosis this is at least as important as for a serious physical wound.

A British Surgeon's Impression of Russian War Surgery

The visit to Russia of a party of British and American surgeons under the auspices of the Medical Research Council has been described in a previous letter to THE JOURNAL. One of the members, the orthopedic traumatic surgeon Mr. Watson-Jones, has given his impressions of Russian war surgery in the *British Medical Journal*. The number of women doctors, women surgeons and nurses who work in the front line was remarkable. Not only do nurses attend to the wounded, but in the intervals of battle they build hospitals. They are obviously skilled in the use of the saw, the plane and the spirit level. The closed plaster technic is used for all major wounds, compound fractures and joint injuries. Professor Yudin claims that in the surgery of war this was first practiced over ninety years ago by the Russian surgeon Pirogoff. Yudin teaches that after wound excision no tube or drain should be used and no gauze pack or other foreign body should be inserted. An unpadded plaster cast is applied directly over the wound. A difference from our methods practiced in Russia was of interest: "A large excision of all injured and contused tissues is recommended no matter how many hours or days have elapsed since wounding and independently of the presence and degree of infection." In England it is believed that free excision is indicated only during the first twelve or possibly twenty-four hours and that after that time wide dissection is liable to disseminate infection; we think that the correct treatment in late cases is incision and drainage rather than excision and drainage. Watson-Jones is still unconvinced of the superiority of the Russian method but thinks that further study is necessary.

The visitors did not approve of all they saw; they disagreed on the treatment of frostbite; they were unconvinced of the merits of muds, balsams and wood distillates. They thought that British rehabilitation was better. On the other hand, much of the Russian work was better than ours. Their specialization was excellent; their training of medical students more thorough; their organization of surgical services superb. Each of us could learn from the other.

Marriages

WILLIAM C. LONG JR., Lock Haven, Pa., to Miss Geraldine E. Chamberlain of High Bridge, N. J., July 15.

LUTHER H. CONE, Chanute, Kan., to Miss Pamela Van Wacland of Sidney, Australia, June 9.

CLAY R. MILLER, Pensacola, Fla., to Miss Bernetta Helen Loggins in Nashville, Tenn., in June.

CLEMENT A. SONES to Mrs. Carroll Browning Martin, both of Des Moines, Iowa, September 10.

PAUL F. MANESS to Miss Anne Barrow, both of Jackson, N. C., at Pensacola, Fla., July 28.

PAUL J. STRASSBURGER, New York, to Miss Dora Schurman in Cortland, N. Y., August 7.

ROBERT PETTIBONE GILBERT, Chicago, to Miss Anne Heneage of Oak Park, Ill., June 5.

WILLIAM HOUSTON PRICE to Miss Helen Callahan, both of Los Angeles, June 19.

HENRY D. FREIMAN to Miss Rose Specter, both of Philadelphia, April 18.

LOUIS A. FUOCO to Miss Agatha Memoli, both of Brooklyn, June 26.

Deaths

Leo Buerger ● New York; Columbia University College of Physicians and Surgeons, New York, 1901; professor of urologic surgery at the New York Polyclinic Medical School and Hospital in 1917; formerly professor of surgery (urology) at the College of Medical Evangelists, Loma Linda and Los Angeles; member of the American Urological Association and the American Association of Pathologists and Bacteriologists; fellow of the American College of Surgeons; voluntary assistant at the Breslau Surgical Clinic in Germany, 1905-1906; for many years on the staff of Mount Sinai Hospital; attending surgeon to the Beth David and Bronx hospitals; consultant in the genitourinary department, Israel Zion Hospital, Brooklyn, and attending urologist to the Wyckoff Heights Hospital, Brooklyn; discovered Buerger's disease (thromboangiitis obliterans) in 1908 and in the same year assisted in the development of the Brown-Buerger cystoscope; devised an operating cystoscope in 1910, the cystouretlroscope and other urologic instruments; author of "Circulatory Disturbances of the Extremities"; aged 64; died, October 6.

Henry Gray Barbour ● New Haven, Conn.; Johns Hopkins University School of Medicine, Baltimore, 1910; assistant professor of pharmacology at Yale University School of Medicine from 1912 to 1921, associate professor of pharmacology and toxicology from 1931 to 1937 and since 1937 research associate professor; professor of pharmacology at McGill University Faculty of Medicine, Montreal, Que., Canada, from 1921 to 1923 and professor of physiology and pharmacology at the University of Louisville (Ky.) School of Medicine from 1923 to 1931; an Associate Fellow of the American Medical Association; member of the Central Society for Clinical Research, American Physiological Society, Society of Pharmacology and Experimental Therapeutics, American Society of Biological Chemists and the Society of Experimental Biology and Medicine; conducted gas investigations for the United States government during World I; author of "Experimental Pharmacology and Toxicology"; aged 57; died, September 23, of acute pulmonary edema and hypertensive heart disease.

William Henry Lohman ● Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1904; professor of clinical medicine at the Long Island College of Medicine, where he had been instructor of physical diagnosis from 1908 to 1911; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; lieutenant in the medical corps of the U. S. Navy from 1917 to 1919; chief of the medical service, Camp Hospital number 15, American Expeditionary Forces, 1917-1918; chief of the medical service, Navy Base Hospital number 1 at Brest, France, 1918-1919; recently helped to organize Army General Hospital number 79; attending physician at the Brooklyn Thoracic Hospital from 1908 to 1910 and physician in chief from 1911 to 1916; attending physician since 1925 at the Brooklyn Hospital; assistant attending physician at St. John's Hospital from 1920 to 1930 and consulting physician since 1930; medical inspector, department of health of New York City, from 1907 to 1911; aged 62; died, August 8.

Max Joseph Exner ● Newark, N. J.; University Medical College of Kansas City, Mo., 1906; an Associate Fellow of the American Medical Association; epidemiologist and director of venereal disease for the city department of health; physical director for Carleton College, Northfield, Minn., from 1892 to 1898, the Y. M. C. A., in Troy, N. Y., 1898-1899, in Kansas City, Mo., from 1899 to 1908 and in China from 1908 to 1911; director of sex education for the International Committee of the Y. M. C. A., from 1911 to 1920; consultant and for many years director of the educational division of the American Social Hygiene Association; during World War I in charge of social hygiene education for the U. S. Army, cooperating with the war department commission on training camp activities; author of "Rational Sex Life for Men" and "Sexual Side of Marriage"; aged 72; died in the Presbyterian Hospital, October 8.

Julian Mast Wolfsohn ● San Francisco; John Hopkins University School of Medicine, Baltimore, 1911; clinical professor of medicine (neuropsychiatry), Stanford University School of Medicine; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Neurological Association and the American Psychiatric Association; fellow of the American College of Physicians; served during World War I; chief medical director of the Alexander Sanitarium, Belmont; consultant in neuropsychiatry at the Children's Hospital, Mount Zion Hospital, San Francisco Hospital and the Veterans Administration Facility; member of the psychiatric board of the United States Penitentiary Hospital, Alcatraz; aged 60; died in Stanford University Hospitals July 1, following an operation for intestinal obstruction.

Louis Thales Hess ● Colonel, U. S. Army, retired, Columbus, Ohio; Jefferson Medical College of Philadelphia, 1895; entered the medical corps of the U. S. Army as an assistant surgeon in 1899; rose through the various grades to that of colonel in 1918; retired in 1931 at his own request after thirty-two years' service; served for two years in Cuba during the American occupation and in 1902 was sent to the Philippines for three years; during World War I was chief of the medical service of the National Guards units in the militia bureau in Washington, D. C.; for four years superintendent of the Ancon Hospital, now Gorgas Hospital, in Panama; from 1923 to 1931 was stationed at Columbus as Fifth Corps area surgeon; fellow of the American College of Surgeons; aged 72; died, July 27, of arteriosclerosis.

George Huston Bell ● New York; University of Virginia Department of Medicine, Charlottesville, 1897; an Affiliate Fellow of the American Medical Association; member of the American Ophthalmological Society; past president of the New York Ophthalmological Society; fellow of the American College of Surgeons; a specialist certified by the American Board of Ophthalmology; served as eye consultant for the U. S. Public Health Service; consulting ophthalmic surgeon to the New York Eye and Ear Infirmary; consulting ophthalmologist to St. Andrew's Convalescent Hospital and the New York Polyclinic Medical School and Hospital; visiting ophthalmic surgeon to the U. S. Marine Hospital; aged 77; died, October 5, of heart disease.

Burton Alexander Hall ● Oxford, N. Y.; Syracuse University College of Medicine, 1907; president and for many years a member of the board of education; past president of the Chenango County Medical Society; served overseas in the medical corps of the U. S. Army during World War I; for many years served as health officer of Oxford; member of the staff of the Chenango Memorial Hospital, Norwich; consultant physician on the staff of the Woman's Relief Corps Home; member of the board of managers of Brookside Crest Sanitarium, Sherburne; a director of the National Bank of Oxford; a charter member of the Oxford Rotary Club and past president; aged 62; died, July 24, of cerebral hemorrhage and chronic cardiovascular renal disease.

Frederick Calhoun Bugbee, Tucson, Ariz.; Jefferson Medical College of Philadelphia, 1925; member of the Arizona State Medical Association; diplomate of the National Board of Medical Examiners; captain in the medical reserve corps, U. S. Army, not on active duty; at one time member of the Verona (N. J.) Council and served as chairman of the fire and police committees; formerly on the staffs of the Essex Mountain Sanatorium, Verona, Orange Memorial Hospital and the Montclair Community Hospital, all of New Jersey; served on the staffs of the Comstock Children's, Pima County and St. Mary's hospitals; affiliated with the Hicks-Bugbee Clinic; aged 44; died, July 25, of asthma.

Ralph Kinsey Updegraff Sr., Cleveland; University of Wooster Medical Department, Cleveland, 1902; specialist certified by the American Board of Internal Medicine; past president of the Academy of Medicine of Cleveland; member of the Ohio State Medical Association and formerly councilor of the Fifth District; fellow of the American College of Physicians; formerly instructor and associate in physical diagnosis at Western Reserve University School of Medicine; director of medicine at St. John's Hospital for twenty-five years; served on the staffs of the City and St. Luke's hospitals; aged 70; died in Wilmington, Del., July 13, of coronary occlusion.

Thomas Maximus Rivers ● Kissimmee, Fla.; Medical College of the State of South Carolina, Charleston, 1900; past president of the Midland Medical Society and the Orange County Medical Society; served as health officer of Kissimmee and of Osceola County for many years; recently served as chairman of the health and housing unit under the Osceola County Defense Council; member of the Southern Medical Association and the Florida Railway Surgeons Association; on the staff of the Osceola Hospital; author of "The Autonomic Diseases or the Rheumatic Syndrome"; aged 74; died, July 27, of coronary thrombosis.

John Bapst Blake, Brattleboro, Vt.; Harvard Medical School, Boston, 1891; member of the Massachusetts Medical Society, American Surgical Association, New England Surgical Society, Boston Obstetrical Society, Boston Medical Library Association and the American Gastro-Enterological Association; fellow of the American College of Surgeons; formerly assistant professor of surgery at his alma mater and the graduate school; served for many years on the staffs of the Boston City, Long Island and Massachusetts General hospitals, Boston; co-author of "Case Teaching in Surgery"; aged 77; died, August 17, of chronic myocarditis and arteriosclerosis.

George Goodhue Kineon, Gallipolis, Ohio; Miami Medical College, Cincinnati, 1905; member of the Ohio State Medical Association, American Psychiatric Association, National Association for the Study of Epilepsy, American Association for the Study of the Feeble Minded, Eugenics Research Association and the International League Against Epilepsy; chairman of the Gallia County American Red Cross and the county draft board during World War I; served as judge of the Court of Honor of the Boy Scouts of America; medical director and superintendent of the Ohio Hospital for Epileptics since 1911; aged 64; died, August 21, of heart disease.

Howard Gregory Case ✠ Syracuse, N. Y.; Syracuse University College of Medicine, 1903; associate professor of clinical surgery at his alma mater, where he had been demonstrator of anatomy, instructor in anatomy and applied anatomy and associate professor of surgery; specialist certified by the American Board of Surgery and a member of the founders group; president of the board of trustees of the Cazenovia (N. Y.) Seminary; served on the staffs of the Syracuse Free Dispensary and the Hospital of the Good Shepherd, Syracuse University, where he died, August 4, of coronary thrombosis, aged 62.

Walter Elijah Bostwick, Algonac, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1893; served in the medical corps of the U. S. Army during World War I; for many years served as health officer of Clay Township and as treasurer of the school board; for twenty-five years chairman of the Clay Township unit of the St. Clair County chapter, American Red Cross; formerly United States deputy collector of customs; for several years a member of the village council; a director of the Algonac Savings Bank; aged 77; died in the Harper Hospital, Detroit, August 3, of pneumonia.

George Hamilton Walker ✠ Winona, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1908; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the Minneapolis Otolaryngology and Ophthalmology Association; fellow of the American College of Surgeons; member of the Winona Clinic for many years; affiliated with the Miller Clinic, St. Paul, from 1922 to 1926; aged 63; on the staff of the Winona General Hospital, where he died, July 2, of cerebral hemorrhage.

Edgar F. Dodds ✠ Tacoma, Wash.; Northwestern University Medical School, Chicago, 1897; past president of the Pierce County Medical Society; served in France and as a captain in the medical corps of the U. S. Army during World War I; fellow of the American College of Surgeons; chairman of the Tacoma Orthopedic Clinic; consultant on the staff of the Northern Pacific Beneficial Association Hospital; on the staffs of St. Joseph's Hospital and the Tacoma General Hospital, where he died, July 23, of pernicious anemia and Hodgkin's disease, aged 71.

Ray Clifton Gabler, Chambersburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1932; member of the Medical Society of the State of Pennsylvania; on the staff of the Chambersburg Hospital; began active duty as a captain in the medical corps of the Army of the United States in November 1942; attached to the Air Corps Officers' Training School at Miami Beach, Fla.; relieved from active duty in June 1943; honorably discharged in July 1943 an account of physical disability; aged 39; died, August 6, of a self-inflicted bullet wound.

Joseph W. Albright, Elizabethtown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1879; member and for two terms vice president of the Medical Society of the State of Pennsylvania; president of the Lycoming County Medical Society in 1894 and 1901 and formerly vice president; served as president of the board of health of Muncy; formerly a member of the staff of the Muncy Valley Hospital; aged 86; died in the Philadelphia Freemasons' Memorial Hospital, Masonic Homes, August 5, of chronic valvular heart disease.

Clyde Rolland Bennett, Half Moon Bay, Calif.; University of Nebraska College of Medicine, Omaha, 1928; member of the American Psychiatric Association; aged 43; died, August 11.

Gabriel D. Bos ✠ Holland, Mich.; Detroit College of Medicine and Surgery, 1920; on the staff of the Holland City Hospital; aged 55; died, August 14, of coronary occlusion.

Harry S. Bossart, Buckley, Ill.; Jefferson Medical College of Philadelphia, 1886; also a pharmacist; for twenty-six years mayor of Buckley; formerly a member of the school board; for many years surgeon for the Illinois Central Railroad; aged 78; died, August 15, of cerebral hemorrhage.

Arthur J. Bradbury, Old Town, Maine; University of Vermont College of Medicine, Burlington, 1892; past president of the Penobscot County Medical Society; served as mayor and as city and school physician; aged 76; died, August 7, of heart disease.

Ralph Waddell Brown, Roanoke, Va.; University of the City of New York Medical Department, New York, 1889; member of the Medical Society of Virginia; past president of the Roanoke Academy of Medicine; served during World War I; aged 76; served on the staff of the Jefferson Hospital, where he died, August 9, of heart disease.

Melchor Gist Cockey, Salina, Kan.; University of Maryland School of Medicine, Baltimore, 1879; served in Cuba during the Spanish-American War and in China during the Boxer rebellion; formerly a captain in the Kansas National Guard; aged 90; died in Kansas City, Mo., August 1, of empyema following pneumonia.

Frank Smith Coller, Vicksburg, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; served during World War I; president of the village for one term; aged 79; died in a Kalamazoo hospital, August 9, of myocarditis and myocardial degeneration.

William Franklin Cope, Easton, Pa.; Jefferson Medical College of Philadelphia, 1902; member of the Medical Society of the State of Pennsylvania; served during World War I; chief of the ophthalmology department, Easton Hospital; a director of the First National Bank; aged 64; died in the Cornell Medical Center, New York, August 17, of coronary disease.

Charles Smith Craig ✠ Hilton, N. Y.; University of Buffalo School of Medicine, 1897; served as health officer of the town of Parma; on the staff of the Brockport General Hospital; formerly examiner for several insurance companies; aged 71; died in St. Mary's Hospital, Rochester, August 15, of coronary thrombosis.

Norman Wilbur Currie ✠ Plainfield, N. J.; University of the City of New York Medical Department, 1895; fellow of the American College of Surgeons; served during World War I; aged 71; on the staff of the Muhlenberg Hospital, where he died, August 1, of heart disease and cerebral hemorrhage.

Matthew Hasbrouck Du Bois, Washingtonville, N. Y.; Bellevue Hospital Medical College, New York, 1894; member of the Medical Society of the State of New York; on the courtesy staffs of St. Luke's Hospital, Newburgh and the Cornwall (N. Y.) Hospital, where he died, August 8, of coronary thrombosis, aged 71.

Leo Huggins Du Bose, Great Falls, S. C.; University of Georgia Medical Department, Augusta, 1912; also a druggist; aged 55; died, August 13, of a self-inflicted bullet wound.

Calvin A. Eaton, Yuma, Ariz.; Chicago Medical School, 1927; member of the Arizona State Medical Association; served as city health officer; aged 45; died in the Yuma County General Hospital, August 2, of pulmonary embolism.

Erastus Mickel Finch, Takoma Park, Md.; National University Medical Department, Washington, D. C., 1902; also a lawyer; for many years chief of the medical division of the bureau of pensions and later assistant medical referee; formerly justice of the peace; aged 88; died, August 18, of cerebral hemorrhage, cerebral accident, arteriosclerosis and hypertension.

Aaron Glass, New Haven, Conn.; St. Louis College of Physicians and Surgeons and the Kansas City College of Medicine and Surgery, 1922; aged 54; died suddenly, August 2.

William Emmett Ham, Beattie, Kan.; Rush Medical College, Chicago, 1882; member of the Kansas Medical Society; served as mayor, councilman, member of the school board of district number 29 and postmaster; aged 85; died in the Randell Hospital, Marysville, July 30.

Clara Addleman Hooper, Glen Arbor, Mich.; Bennett Medical College, Chicago, 1913; aged 73; died in the James Decker Munson Hospital, Traverse City, July 26, of cerebral hemorrhage.

Everett Dennison Hooper, Boston; College of Physicians and Surgeons, Boston, 1891; aged 74; died, June 1.

Y. Frank Hopkins ● Taylor, Texas; Kentucky School of Medicine, Louisville, 1901; served during World War I; on the staff of the Wedemeyer Hospital; served as president and director of the Kiwanis Club; aged 66; died, July 19, of carcinoma of the colon.

Maximilian R. Horwitz, St. Louis; Missouri Medical College, St. Louis, 1893; formerly on the staff of the Missouri Baptist Hospital; aged 72; died, July 29, of heart disease.

Thomas L. Howard, Augusta, Ga.; University of Georgia Medical Department, Augusta, 1908; also a pharmacist; at one time trustee from the 119th district; aged 64; died, July 28, of heart disease.

George Frederick Hughes Jr., Somerville, Mass.; Tufts College Medical School, Boston, 1900; aged 71; died, June 3, of cerebral hemorrhage with hypostatic pneumonia.

Herbert Wellington Insley, Chanute, Kan.; University Medical College of Kansas City, Mo., 1913; member of the Kansas Medical Society; served in France during World War I; aged 61; died, July 16.

Alton Atwell Jackson, Everett, Mass.; Harvard Medical School, Boston, 1883; member of the Massachusetts Medical Society; member of the Selective Service Board during World War I; on the staff of the Whidden Memorial Hospital; aged 89; died, July 26, of pneumonia.

Charles Albert Jenkins, Willimantic, Conn.; Baltimore Medical College, 1911; member of the Connecticut State Medical Society; served as health officer of Willimantic; served in France during World War I; at one time trustee of the Norwich State Hospital; aged 55; died in the Windham Community Memorial Hospital, July 24.

Edgar Augustus Jones, Avant, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1885; member of the Oklahoma State Medical Association; served during World War I; aged 82; died in the Veterans Administration Facility, Muskogee, July 15, of cerebral hemorrhage.

William Frederick Kaiser ● Portland, Ore.; University of Oregon Medical School, Portland, 1908; recently on the staff of the Portland induction center; aged 63; died in the Providence Hospital, July 8.

George L. Kearney, St. Louis; Missouri Medical College, St. Louis, 1891; formerly on the staff of the City Sanitarium; aged 79; died, August 5, of myocarditis.

William R. Kennedy, Wauwatosa, Wis.; State Universitiy of Iowa College of Homeopathic Medicine, Iowa City, 1895; member of the State Medical Society of Wisconsin; on the staff of St. Luke's Hospital, Milwaukee; aged 71; died in St. Mary's Hospital, Milwaukee, August 3, of diverticulosis of the colon.

John Francis Kent, Brooklyn; Bellevue Hospital Medical College, New York, 1888; member of the Medical Society of the State of New York; served as medical inspector of schools for the department of health; aged 78; died in the Kings County Hospital, August 1, of arteriosclerosis and papilloma of the bladder.

Ralph Porter Kent ● Attleboro, Mass.; Harvard Medical School, Boston, 1904; served as health officer of Attleboro; member of the staff of the Sturdy Memorial Hospital; aged 63; died in Oak Bluffs, August 4, of cerebral hemorrhage.

James Silas Kolb, Clarksville, Ark.; University of Arkansas School of Medicine, Little Rock, 1892; member of the Arkansas Medical Society; past president of the Johnson County Medical Society; on the staff of St. Hildegard's Municipal Hospital; aged 78; died, August 9, of thromboangiitis obliterans of the left leg.

Siegfried Kraft ● Sheboygan, Wis.; Leopold-Franzens-Universität Medizinische Fakultät, Innsbruck, Austria, 1909; member of the staff of the Sheboygan Memorial Hospital; dermatologist and urologist to the Sheboygan Clinic; aged 60; died, August 3, of bronchiogenic carcinoma of the lung.

John William Krohn ● Joliet, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1912; fellow of the American College of Surgeons; formerly state surgeon; served in France during World War I; member of the Selective Service System; on the staff of St. Joseph's Hospital; active executive chairman and formerly chief of staff at the Silver Cross Hospital, where he died, August 21, of lobar pneumonia and coronary thrombosis, aged 52.

LIEUT. COMDR. EDWARD E. EVANS, M. C., U. S. N., 1899-1942

Bernard John Lammers, Louisville, Ky.; Louisville Medical College, 1890; aged 81; served on the staff of St. Anthony's Hospital, where he died, August 2, of pernicious anemia and myocarditis.

Nicholson Chambers Lanier, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1895; aged 77; died in the Charity Hospital, July 18, of malnutrition and anemia.

David William Medill, Martins Ferry, Ohio; Colorado School of Medicine, Boulder, 1896; also a pharmacist; aged 71; died, July 28.

Amherst Merriman, La Jolla, Calif.; Detroit College of Medicine and Surgery, 1921; member of the Colorado State Medical Society; aged 46; died in Ramona, July 30, of acromegaly.

Marion Lexter Montgomery, Louisville, Miss.; Mississippi Medical College, Meridian, 1910; member of the Mississippi State Medical Association; health officer of Winston County; member of the Rotary Club; aged 61; died in Memphis, Tenn., August 10, of coronary heart disease.

Albert Augustus Parker ● Pocomoke City, Md.; College of Physicians and Surgeons, Baltimore, 1909; a charter member and first president of the Rotary Club of Pocomoke City; aged 58; died in Dr. Harvey Beck's Clinic, Baltimore, August 3, of coronary thrombosis.

James Haven Pond, Los Gatos, Calif.; Oakland College of Medicine and Surgery, 1910; a director of the First National Bank of Los Gatos; aged 80; died, August 6, of arteriosclerotic heart disease and coronary occlusion.

Albert Alexander Potterf, Lenexa, Kan.; Homeopathic Medical College of Missouri, St. Louis, 1888; aged 91; died, July 16, of lobar pneumonia.

Ira W. Robertson, Tulsa, Okla.; Memphis (Tenn.) Hospital Medical College, 1901; formerly owner of a hospital in Henryetta; aged 74; died, July 30.

John Ansel Schoonover ● Denver; University of Cincinnati College of Medicine, 1925; assistant professor of pediatrics at the University of Colorado School of Medicine; specialist certified by the American Board of Pediatrics, Inc.; member of the American Academy of Pediatrics; served as president of the medical staff of the Children's Hospital, where he died, July 13, of uremia, polycystic kidneys and a fractured scapula, aged 43.

Thomas Campbell Sexton, Fremont, Neb.; Washington University School of Medicine, Baltimore, 1871; Civil War veteran; aged 99; died, July 28, of coronary thrombosis.

Alfred Joy Willits, Anaconda, Mont.; Northwestern University Medical School, Chicago, 1900; member of the Medical Association of Montana; fellow of the American College of Surgeons; clinical assistant in medicine from 1908 to 1912 and clinical assistant in surgery at his alma mater from 1912 to 1914; for twenty-three years chief of staff of St. Ann's Hospital; aged 68; died, July 26, of heart disease.

KILLED IN ACTION

Edward Ellsworth Evans ● Surgeon, Lieutenant Commander, U. S. Navy, San Francisco; University of Oregon Medical School, Portland, 1928; entered the U. S. Navy in June 1928 as an assistant surgeon, lieutenant, junior grade; Evans Avenue on the reservation of the new U. S. Naval Hospital, Dublin, Ga., named in his honor by the Bureau of Medicine and Surgery; aged 43; was killed in action in the Solomon Islands, Dec. 12, 1942.

Correspondence

EVALUATION OF ALBUMINURIA

To the Editor:—In THE JOURNAL, August 14, page 1151, a clinical pathologist for an army induction team described his difficulties in knowing when to reject a man with albuminuria. At one army induction station, during the course of a study (to be published) on several aspects of albuminuria in March and April 1943, we formulated a series of rules to aid the examining physicians in evaluating the "albuminuria cases." We have found them to be applicable to practically all questions regarding the significance of albuminuria that arise in connection with the processing of large numbers of men in a short period of time.

DIRECTIONS FOR DETERMINING SIGNIFICANCE OF ALBUMINURIA IN SELECTEES

1. All albuminuria cases, except (*a*) those definitely rejected on other grounds and (*b*) those whose albuminuria clears with the second test, are studied by a special method.

2. When albumin is found in the first two urines, the selectee is given a printed form by the laboratory with orders to return as soon as possible for additional urine examinations. He is also advised to restrict the intake of fluids.

3. On his return the selectee assumes the prone position on an examining table in one of the cubicles. A urine is collected at the end of half an hour and at the end of one and one-half hours; these samples are voided while the selectee is still in the recumbent position.

4. The results of the urine examinations are recorded by the laboratory on a special form, which is then attached to the record of the selectee. On this special form are written:

Name:.....Date:.....

Urine No.	Albumin	Initials
1.	.....	.....
2.	.....	.....
3.	.....	.....
After ½ hour recumbency	.....	.....
After 1½ hours' recumbency	.....	.....

If rejected, state diagnosis:
This slip is to be kept by the Medical Officer.

INTERPRETATION OF RESULTS OF URINE TESTS

5. If the last two or more urines are negative for albumin, the case is one of transient albuminuria and the man should be accepted.

6. If the last urine (which is the second voided in the recumbent position) is negative for albumin, the case is one of orthostatic albuminuria and the man should be accepted if no more than a rare cast or red or white cell is found on only one of several observations.

7. If albumin persists in all urines, the following inquiries should be made:

(*a*) Presence of urinary symptoms (such as frequency, nocturia, hematuria, pyuria and pain).
(*b*) Previous rejections here.
(*c*) History of albuminuria or edema.
(*d*) Previous diagnosis of kidney disease.
(*e*) Upper respiratory infections (present or very recent).
(*f*) Moderate intake of alcohol previously.
(*g*) Sexual intercourse or masturbation the night before examination.
(*h*) History of gonorrhea.

8. If a definite diagnosis of chronic kidney disease can be made on the basis of answers to the questions, the persistence of albuminuria and the findings in the sediment, the man should be rejected.

9. If a definite diagnosis cannot be made, the man should be deferred for two months. At that time urines will be examined again and a final decision made, unless a factor that may produce temporary albuminuria (such as colds or alcoholism) is present, in which case the selectee should again be deferred. If there is no such factor, and the albuminuria is persistent, then the man should be rejected on the basis of persistent albuminuria.

10. All pertinent information obtained in section 7 should be recorded on the back of the work sheet.

The terms transient, orthostatic or persistent albuminuria are used to describe the several varieties encountered. Men who show persistent albuminuria should be rejected because they are the ones with overt or insidious renal disease (Derow, H. A.: The Diagnostic Value of Serial Measurements of Albuminuria in Ambulatory Patients, *New England J. Med.* **227**:827 [Nov. 26] 1942. Young, H. H.; Haines, J. S., and Prince, C. L.: Orthostatic Albuminuria: The Importance of Its Recognition by Medical Examining Boards, *Mil. Surgeon* **92**:353 [April] 1943).

HARRY A. DEROW, M.D.
LAWRENCE I. STELLAR, M.D.
Boston.

WOUND HEALING AND IMPLANTATION OF SULFONAMIDES

To the Editor:—In the August 7 issue of THE JOURNAL in the article on "Wound Healing and Infection After Local Implantation of Sulfonamide Powder," by J. Albert Key, mention is made of an earlier paper of mine. I believe it would be well if I answered certain of the observations.

Late in 1942 I published further observations in the *Journal of Bone and Joint Surgery* in which I pointed out that, among other things, larger amounts of sulfonamides were used topically in the earlier months than were necessary and that after the publication of my first report I began using smaller quantities. However, I feel that the larger amounts were not the only retarding factor in wound healing; that the application of the drug to the cutaneous edges of the wound was, if anything, more disadvantageous. Since my first publication I have used sulfanilamide topically in well over 400 cases of all types—clean, infected, lacerated and other traumatic wounds, and in surgical incisions. I am fully convinced, as I have been from the start, of its protective and therapeutic effects. But I place it deep in the wound, and if I do place it subcutaneously I keep it away from the skin edges. By attending to these two factors, distribution and quantity, I believe I have avoided any retardation of healing. May I add that the quantities used previous to my first report, and on which that report was based, were the quantities currently used at that time. If my memory serves me right, and I do not have any reference material at hand, Dr. Key shortly after that publication, or at about that time, was advocating lesser quantities of the drug than had been used.

The material which I am now seeing at rather close quarters has increased my belief in the efficiency of sulfonamides used topically. I am not yet ready to publish any data because I use it on all casualties, since my faith in it forbids me to withhold it from any. Since my later publication (*J. Bone & Joint Surg.* **24**:937 [Oct.] 1942) has already noted these changes, it would be too bad if an earlier observation in any way dissuaded surgeons from its use. I believe that even there I stated that its use had become obligatory in any case of potential infection.

EDGAR M. BICK, Major, M. C., A. U. S.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Oct. 16, page 437.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Nov. 15-17 and Jan. 17-19. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Locally, Feb. 12. Final date for filing application is Nov. 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, Dec. 13-16. Los Angeles, Jan. 15-16. Final date for filing application is Nov. 1. Sec., Dr. John Green, 6830 Waterman Blvd., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Written and Oral. Part II.* Chicago, Jan. 21-22. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans, La.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Los Angeles, Feb. 2-5. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Feb. 4. *Oral.* Philadelphia, March 25-26, and San Francisco, May 6-7. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* Locally, Dec. 20-21. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: February. Final date for filing application is Dec. 15. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, February. *Written.* Various centers, December. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Failure of Physician to Appeal from Order Revoking License as Affecting Right to Equitable Relief.—The plaintiff was licensed in 1912 to practice medicine and surgery in the state of Washington. She was convicted in November 1938 of violating the federal narcotic act and was sentenced to imprisonment in a penal institution in Minnesota. In January 1939 a complaint was filed with the director of licenses of Washington, alleging that because of the facts on which the conviction was had the plaintiff was guilty of unprofessional conduct and asking that her license "to practice drugless healing" be revoked. Notice of this complaint and of the hearing to be held on it was served on her in the penal institution out of the state of Washington. On February 23, while the plaintiff was still confined in the penal institution, a hearing was held in Washington on the complaint and at that hearing she was represented by counsel. Following the hearing, the director revoked her license "to practice medicine and surgery," Aug. 4, 1939. No appeal was taken from either the federal conviction or the order revoking her license. In February 1941, more than a year subsequent to the revocation of her license, she filed a motion with the state director of licenses to vacate the order of Aug. 4, 1939, alleging that that order was unlawful and void because it revoked her license to practice medicine and surgery, a judgment in excess of the relief asked for in the unamended complaint filed with the director, which sought merely to revoke her license "to practice drugless healing." The director overruled the motion, and the plaintiff instituted an action in equity to set aside the director's order revoking her license. The trial court dismissed the action, and the plaintiff appealed to the Supreme Court of Washington.

The plaintiff contended that the trial court erred in dismissing her action because, (1) in view of the fact that she was confined out of the state when the notice of the hearing was served on her, the notice was insufficient in form and (2) the action of the trial court was based on certain "interdepartmental evidence of which she had no knowledge or opportunity to rebut." A sufficient answer to these contentions, said the Supreme Court, is the fact that the plaintiff was at all times represented by counsel. This remark of the court impliedly indicated that all defects, if any, in the proceedings before the director were waived by the appearance of counsel. Apparently, it was then suggested that the attorney who appeared for the plaintiff at the hearing and in filing the motion with the director to vacate the order of revocation had merely appeared specially. In effect, this contention was that the counsel had appeared solely to question the jurisdiction of the director to proceed under the circumstances and not to defend the action on its merits and hence his appearance did not waive defects in the complaint and in the proceedings that followed. However, the court was unable to find anything in the record that would indicate that counsel had appeared specially only. Even if there had been a special appearance, said the court, it was waived by counsel's asking for affirmative relief. (Apparently, though the fact is not clear, the affirmative relief referred to as having been sought was the motion asking the director to vacate the order of revocation.)

The principal contention of the plaintiff seems to have been that the order of revocation was void because it was "relief of a different kind and in excess of the relief requested" in the original complaint, which remained unamended during the proceedings. But, said the court, it is elementary that the prayer of a complaint is not a part of the complaint. The prayer in this instance was the request in the complaint filed with the director that the plaintiff's license "to practice drugless healing" be revoked. Under the facts alleged in the complaint a cause of action was stated and it is not a controlling circumstance that the complaint was not amended so that the prayer would be to revoke her license to practice medicine and surgery. There is no basis for holding that the order revoking the license was void because the prayer of the complaint referred to drugless healing. The facts in this case, the court continued, furnish no basis for equitable intervention on our part. While it is true a party may obtain relief in equity against a judgment even after one year from the date of the entry of the judgment, nevertheless proper grounds for equitable intervention must be shown and that was not done here. Moreover, where a party has failed to make a proper defense at law through his own negligence, equity will not aid him. Even though a judgment may be inequitable, it will not be set aside nor will its enforcement be enjoined when it was the result of the complaining party's own fault or inexcusable neglect. In this case the applicable Washington statute gave the plaintiff the right to appeal from the order revoking her license if she acted within thirty days after the entry of the order. This was not done. Had it been done, any inequitable features surrounding the matter could have been corrected on appeal.

The judgment of the trial court adverse to the plaintiff was affirmed.—*Dale v. Cohn, Director of Licenses, 127 P. (2d) 412 (Wash., 1942).*

Society Proceedings

COMING MEETINGS

Aero Medical Association of the United States, Cincinnati, Ohio, Oct. 26-27. Dr. David S. Brachman, 5440 Cass Ave., Detroit, Secretary.

American Society of Anesthetists, New York, Dec. 9. Dr. McKinnie L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary.

Association of American Medical Colleges, Cleveland, Oct. 25-27. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 26-29. Dr. Arthur G. Sullivan, 16 North Carroll St., Madison, Wis., Managing Director.

Omaha Mid-West Clinical Society, Omaha, Oct. 25-29. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, San Francisco, Nov. 4-5. Dr. T. Floyd Bell, 431 Thirtieth St., Oakland, Calif., Secretary.

Radiological Society of North America, Chicago, Nov. 29-Dec. 3. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Seaboard Medical Association, Richmond, Va., Nov. 30-Dec. 2. Dr. Clarence P. Jones, 3117 West Avenue, Newport News, Va., Secretary.

Southern Surgical Association, New Orleans, Dec. 7-9. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Southern Medical Association, Cincinnati, November 16-18. Mr. C. P. Loranz, Empire Building, Birmingham, Alabama, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 25-27. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

13:65-92 (Aug.) 1943

Rheumatic Infection in Children. C. K. Pitt.—p. 65.
Diagnosis of Brain Tumor. C. H. Moore.—p. 70.
Kidney and Ureteral Colic Unassociated with Calculus. J. U. Reaves. —p. 73.
Use of Sulfonamides in Gastrointestinal Tract. H. Kennedy.—p. 75.

American Journal of Clinical Pathology, Baltimore

13:329-382 (July) 1943

The Clinical Pathologist as an Experimenter. H. Goldblatt.—p. 329.
*Healing Process in Wounds of Brain. A. H. Baggenstoss, J. W. Kernohan and J. F. Drapiewski.—p. 333.
Effects of Homologous Tissue Extracts on Rate of Epithelization. A. Nettleship.—p. 349.
Virulence of Tubercle Bacilli and Fallacy of Assuming Grade of Virulence from Arbitrary Designations. H. J. Corper and M. L. Cohn.—p. 352.
Studies on Histamine Sensitivity and Anaphylactic Response: II. Effect of Ascorbic Acid Deficient Diet. L. Farmer and Shirley R. Kassman.—p. 362.
Histamine Sensitivity and Anaphylactic Response: III. Theoretical Considerations. L. Farmer.—p. 365.
Thallium Poisoning: II. Quantitative Determination of Thallium in Biologic Material. A. O. Gettler and L. Weiss.—p. 368.
Changes in Cerebrospinal Fluid Following Spinal Anesthesia. B. E. Konwaler.—p. 378.

Healing Process of Wounds of Brain.—Baggenstoss and his collaborators reviewed 70 selected cases in which ventricular puncture wounds had been made in the course of ventriculographic studies. There were many wounds from one day or less to two weeks of age but examples of wounds older than two weeks were more difficult to obtain. Wounds of seven days' duration or less presented (1) a central zone of hemorrhage and necrosis and (2) a peripheral zone of edema and perivascular hemorrhages. Degenerative changes predominated in both zones, but proliferation of endothelial cells of the capillaries and small blood vessels became evident on the fourth day and was fairly well developed by the seventh day. Between the seventh and the tenth day the zone of edema had been transformed into a zone of capillaries and proliferating endothelial cells and fibroblasts. A third zone, consisting of hypertrophied astrocytes peripheral to the zone of capillaries, also became apparent during this time. From the twelfth day on the process of organization continued and gradual absorption of the necrotic débris in the central portion of the wound and its partial replacement by a network of capillaries and fibroblasts occurred. After a month or two fibroblastic proliferation subsided but connective tissue fibrils were more numerous than before. Observations of wounds of six months' duration or more indicated that the healing process had progressed slowly and that complete repair had not yet taken place. Observations of older wounds suggest that complete closure of the defect may or may not take place, depending on the extent of the original injury. Compared with wounds in other parts of the body there is a decided lack of vigor in the healing process of wounds of the brain, and repair takes place at a slow tempo. Repair is more vigorous in the cortex than in the white matter, but no difference could be detected as between children and adults. Astrocytes play a minor role in the reparative process. Microglial cells appear to play only a small role in the production of compound granular corpuscles.

American Journal of Diseases of Children, Chicago

66:1-102 (July) 1943

Prevalence of Rickets in Children Between Two and Fourteen Years of Age. R. H. Follis Jr., Deborah Jackson, Martha M. Eliot and E. A. Park.—p. 1.
Typhoid Paratyphoid Vaccine and Poliomyelitis. J. A. Toomey and Linda A. Tischer.—p. 12.
Disparity Between Oral and Rectal Temperatures After Exercise. J. Brennemann.—p. 16.
Physical Measurements of College Women: Results of Four Consecutive Years of Study. Eva G. Donelson, Margaret A. Ohlson, Bernice Kunerth Watt, Mary Brown Patton and Gladys M. Kinsman.—p. 21.
Variation in Diphtheria Antitoxin Titers of Human Serum: Report of an Extended Study, with Special Reference to an Endocrine and Vitamin Relationship. Mary M. Schmeckebier.—p. 25.
Congenital Atresia of Pancreatic Duct System as Cause of Meconium Ileus: Critical Review of Literature, with Report of 1 Case. W. Kaufmann and Dorothy B. Chamberlin.—p. 55.

American J. Obstetrics and Gynecology, St. Louis

46:183-332 (Aug.) 1943. Partial Index

Excretion of Estrogen and Gonadotropin in Late Pregnancy, with Especial Reference to Toxemias of Pregnancy and to Quantitative Methods. Ruth M. Watts and F. L. Adair.—p. 183.
Plasma Vitamin A and Carotene of Newborn Infant, with Consideration of Fetal-Maternal Relationships. C. J. Lund and Marian S. Kimble. —p. 207.
Action of Syntropan on Uterus. J. A. Wells and A. C. Ivy.—p. 222.
Ergot Alkaloids: Comparison of Ergonovine with Total Alkaloids in Their Effects on Puerperal Uterus. W. Bickers.—p. 238.
Value of Pelvioradiography in Management of Dystocia. A. Weinberg and S. J. Scadron.—p. 245.
*Treatment of Syphilis in Pregnancy by Five Day Massive Dose Method. H. Ratner.—p. 255.
Use of Vaginal Tampons for Absorption of Menstrual Discharges. Madeline J. Thornton.—p. 259.
Influence of Placental Site on Fetal Presentation. R. Torpin and L. P. Holmes.—p. 268.
Caudal Anesthesia for Cesarean Section. A. H. Lahmann and A. C. Mietus.—p. 274.
Analysis of 250 Cases of Postmaturity. L. S. Rathbun.—p. 278.
Clinical Experiences with Pyridoxine Hydrochloride in Treatment of Nausea and Vomiting of Pregnancy. B. B. Weinstein, G. J. Mitchell and G. F. Sustendal.—p. 283.
Vitamin B Factors in Toxic Psychosis of Pregnancy and Puerperium. B. F. Hart and W. T. McConnell.—p. 304.
Inversion and Prolapse of Ruptured Uterus During Labor, Treated by Immediate Vaginal Hysterectomy. P. C. Fox.—p. 305.

Five Day Method of Treatment of Syphilis During Pregnancy.—Twenty-seven pregnant women with syphilis were treated by the five day massive dose method. The majority were given concurrently arsenic and bismuth compounds. The treatment was well tolerated by both mother and fetus regardless of the stage of the pregnancy or the duration of the syphilis, whether primary, secondary or latent. Severe reactions or interference with the pregnancy were not observed. Of the 27 patients 1 was lost from observation; 25 have given birth to full term, normal infants. One syphilitic infant was born of a mother who apparently had acquired a second infection while the infant was still in utero. In addition to this group, 5 other patients who had been treated for early syphilis by the massive dose method later became pregnant and gave birth to normally developed seronegative infants although further antisyphilitic treatment was purposely withheld from the mothers. The results of the treatment on the mothers' syphilis were similar to results obtained in nonpregnant patients treated by the same method for similar types of syphilis.

American Journal of Ophthalmology, Cincinnati

26: 785-900 (Aug.) 1943

Reaction of Rabbit Eye to Normal Horse Serum: Sensitization by Intradermal Injection. T. F. Schlaegel Jr. and J. B. Davis.—p. 785.
Retroillumination. R. I. Lloyd.—p. 799.
Ocular Pathology of Methyl Alcohol Poisoning. W. H. Fink.—p. 802.
Roentgenography of Exophthalmos with Notes on Roentgen Ray in Ophthalmology. R. L. Pfeiffer.—p. 816.
Ophthalmic Prisms, Some Uses in Ophthalmology. G. P. Guibor. —p. 833.
Cakoloma of Optic Nerve: Report of Case. T. Steinberg.—p. 846.
Dermatologic Lesions About the Eyes: Ocular Pemphigus, Ectodermosis Erosiva Pluriorificialis, Triple Symptom Complex, Avitaminosis (Ocular), Contact Dermatitis (Dermatitis Venenata), Xanthelasma, Pseudoxanthoma Elasticum and Angioid Streaks and Lupus Erythematosus (Conjunctiva and Lids). O. S. Ormsby.—p. 850.

American Journal of Physiology, Baltimore

139:481-666 (Aug.) 1943. Partial Index

Ineffectiveness of Adrenal Cortex Preparations in Treatment of Experimental Shock in Nonadrenalectomized Dogs. W. W. Swingle, R. R. Overman, J. W. Remington, W. Kleinberg and W. J. Eversole.—p. 481.
Effect of 17-Hydroxy-11-Dehydrocorticosterone on Growth of Young Adrenalectomized Rats. M. H. Kuizenga, J. W. Nelson and D. J. Ingle.—p. 499.
Back Diffusion of Urea in Mammalian Kidney. V. P. Dole.—p. 504.
Comparison of Atropine and Curare as Antagonists of Acetylcholine. J. V. Luco and M. Altamirano.—p. 520.
Effects of Extracts of Hypophysis, Thyroid and Adrenal Cortex on Some Renal Functions. P. Heinbecker, Doris Rolf and H. L. White.—p. 543.
Influence of Liver on Proteins of Blood Plasma. G. H. Berryman, J. L. Bollman and F. C. Mann.—p. 556.
Relation of Physical Exertion to Resistance of Red Blood Cells to Laking. C. W. Heath.—p. 569.
Vasopressor Effect of Thermal Trauma. W. H. Olson and H. Necheles.—p. 574.
Cardiovascular Adjustments of Man in Rest and Work During Exposure to Dry Heat. H. L. Taylor, A. F. Henschel and A. Keys.—p. 583.
Adrenal Cortex and Blood Pressure Response to Carbon Arc Irradiation. J. S. Graham.—p. 604.
Bioassay of Heparin Preparations. M. H. Kuizenga, J. W. Nelson and G. F. Cartland.—p. 612.

Archives of Dermatology and Syphilology, Chicago

48:143-250 (Aug.) 1943

Keratosis Follicularis: Study of 4 Cases. Alice Carleton and D. Steven.—p. 143.
*Beneficial Effect of Smallpox Vaccine on Recurrent Aphthous Ulcers of Mouth and Tongue. A. W. Grace.—p. 151.
Teaching of Occupational Dermatoses. J. V. Klauder.—p.153.
Epidermolysis Bullosa: Report of Case. M. H. Samitz.—p. 159.
Production of Bullae in Skin of Duck: Preliminary Report. I. A. Mirsky and L. Goldman.—p. 161.
Phagedenic Ulcer (Pyoderma Gangrenosum): Treatment with Sulfapyridine Powder and Moist Chamber Therapy. A. Dostrovsky and F. Sagher.—p. 164.
Apparatus for Application of Irritant Vapors to Skin. R. R. McNary.—p. 173.
Lipoma-Like Basal Cell Epithelioma. R. L. Sutton Jr.—p. 176.
Mycosis Fungoides: Report of Case, with Clinical, Postmortem and Experimental Observations. E. K. Stratton.—p. 179.
Effect of Estradiol Locally Applied to Abnormal Skin. H. Selye.—p. 188.
Petroleum Dermatitis: Report of 2 Cases. M. G. Rosenbaum.—p. 193.

Smallpox Vaccine in Aphthous Ulcers.—Grace employed repeated inoculations of smallpox vaccine in 2 cases of aphthous ulcers on the assumption that the condition is probably caused by a virus akin to that of herpes simplex, a disease which, when recurrent, is frequently controlled by such treatment. In both cases the disease had been unaffected by local applications of caustic materials or by the use of diets or vitamins. Great improvement occurred in the 2 cases.

Archives of Internal Medicine, Chicago

72:147-300 (Aug.) 1943

Carrion's Disease: Immunologic Studies. C. Howe.—p. 147.
*Comparative Value of Digitalis and of Ouabain in Treatment of Heart Failure. I. Chávez.—p. 168.
Involvement of Liver in Disease of Gallbladder. J. L. Batty and S. Gray.—p. 176.
Influence of Thiamine on Induced Hyperthyroidism. R. D. Williams and E. C. Kendall.—p. 185.
Electrocardiographic Criteria of Left Ventricular Hypertrophy: Factors Determining Evolution of Electrocardiographic Patterns in Hypertrophy and Bundle Branch Block. R. Gubner and H. E. Ungerleider.—p. 196.
QRS Complex of Electrocardiogram. M. Gardberg and R. Ashman.—p. 210.
Physical Therapy Applied at Home for Arthritis: Follow-Up Study, with Supplementary Summary of Sedimentation Rate of Erythrocytes in 299 Cases of Arthritis. J. V. Treusch and F. H. Krusen.—p. 231.
Effect of Exercise on Blood Pyruvic Acid: Observations on Trained and Untrained Normal Subjects and on Patients with Heart Disease and with Hypertension. Z. A. Yanof.—p. 239.
Limitations of Erythrocyte Sedimentation Test in Tuberculosis. A. L. Banyai and A. V. Cadden.—p. 245.
Estrogen, Diabetes and Menopause. S. Gitlow and D. M. Kurschner.—p. 250.
Blood: Review of Recent Literature. F. H. Bethell, C. C. Sturgis, R. A. Hettig and O. T. Mallery Jr.—p. 260.

Comparative Value of Digitalis and Ouabain.—Digitalis and ouabain have similar but not identical action on the decompensated heart. Digitalis exerts a more pronounced effect on the functions of sinus excitation and the auriculoventricular conduction, which it depresses; ouabain, on the contrary, acts primarily on the contractility and tonicity, which it stimulates. Digitalis chiefly affects the differentiated, neuromuscular tissue of the heart, ouabain the undifferentiated, contractile fibers of the myocardium. Digitalis administered by the oral route fixes itself slowly on the heart, ouabain administered intravenously acts rapidly. The maximum effect of digitalis is reached in two or three days, that of ouabain in one or two hours. Digitalis accumulates, ouabain does not. On discontinuance of the drug, digitalis extends its effect over a period of several days, up to eight or ten; the effect of ouabain disappears in twenty-four to thirty-six hours. The proper fields for digitalis are the congestive heart failure with tachycardia and especially with auricular fibrillation, fibrillation even in the absence of heart failure and long sustaining treatment of patients with slightly decompensated heart disease. The proper indications for exhibition of ouabain are the acute failure of the left ventricle and chronic failure of the left side of the heart in patients with vascular disease, such as coronary arteriosclerosis, hypertension and syphilitic aortitis. The author recommends one intravenous injection daily of 0.25 mg. in a series of six doses and more according to the tolerance of the patient and the clinical improvement obtained. In thousand of patients treated over a period of twenty years he has not encountered a single death attributable to the drug.

Archives of Otolaryngology, Chicago

38:101-204 (Aug.) 1943

Acoustic Sound Filtration and Hearing Aids. F. M. Grossman.—p. 101.
Incidence of Pathologic Speech Behavior in American General Population. C. H. Voelker.—p. 113.
Hygiene of Voice. E. Froeschels.—p. 122.
Response of Labyrinthine Apparatus to Electrical Stimulation: Site of Action; Faradic Stimulation; Inverse Effects of Anodic and Cathodic Stimulation. E. A. Spiegel and N. P. Scala.—p. 131.
Bone Fistula: Further Studies. P. Guggenheim and L. Guggenheim.—p. 139.
Effect of Surgical Treatment of the Sinuses on Bronchiectasis: Analysis of Results in 75 Cases. R. L. Goodale.—p. 148.
Estimation of Percentage of Compensable Hearing Defects. W. E. Grove.—p. 152.
Diced Cartilage Grafts: New Method for Repair of Skull Defects, Mastoid Fistula and Other Deformities. L. A. Peer.—p. 156.

California and Western Medicine, San Francisco

59:1-104 (July) 1943

Gastric Resection for Peptic Ulcer. J. W. Cline.—p. 7.
*Welding Fumes and Gases: Their Effect on Health of Worker. J. Brodie.—p. 13.
Health Control in Welding. P. Drinker.—p. 18.
Medical Service in U. S. S. R. Army. C. L. Rubenstein.—p. 21.
Nerves of Arm: Some of Their Affections; Their Diagnosis. R. Wartenberg.—p. 22.

Welding and Health of Worker.—According to Brodie the intense ultraviolet rays at the welding arc may produce eye flashes. The arc is also responsible for the nitrous fumes. Another source of danger involves the particulate fumes of iron, manganese, chromium, cadmium, nickel, zinc and magnesium. Other hazards are from fluorides, silicates, varnish, rubber and other substances. There is also oxygen deficiency if the welding is done in a confined space. In cutting galvanized pipes or welding sheets with the electric arc or acetylene torch, some operators will develop metal fume fever because the galvanized coating contains over 95 per cent zinc. A typical attack begins after the man has left his work, i. e. several hours after exposure to the fumes. Sometimes during work he may notice a metallic taste and a dryness in the throat, or nausea and tightness in the chest. After going to sleep he awakens with a chill, feels feverish and breaks out in perspiration. His temperature is between 100 and 102 F. Such an attack lasts twenty-four to forty-eight hours. These workers often develop a certain resistance. Out of 100 workers exposed to galvanized fumes, about 75 do not suffer at all, about 20 have chills occasionally, and only 5 have frequent attacks. Nitrous gases are responsible for a local reaction in the lungs which may be serious and even lead to death. After exposure to the welding gases the worker has an acid taste in his mouth and begins to cough. If he then

goes out into the fresh air, his condition may improve considerably; but five or six hours later the cough returns in a more intensive form, with shortness of breath, cyanosis and a feeling of pressure in the chest. This may be followed by acute pulmonary edema with profuse expectoration of foamy, yellowish or pinkish fluid. Heart failure and death may follow in forty-eight hours. If the amount of nitrous gases inhaled is smaller, the patient may develop, not pulmonary edema, but pneumonia or acute bronchitis. Welding is not a hazardous occupation provided the concentration of fumes is kept at a low level. Although after many years of welding the lungs may show certain fibrotic or nodular changes which in an x-ray film may remind one of early silicosis, there is neither the shortness of breath nor the tendency to tuberculosis which is seen in silicosis. It is important that the physician realize the essential harmlessness of these so-called spots on the lungs, so that he may be able to explain away the fears of his patient and reassure him.

Canadian Medical Association Journal, Montreal

49:77-160 (Aug.) 1943

Challenge to Organized Medicine. A. E. Archer.—p. 77.
Control of Tuberculosis in Manitoba. F. L. Ross.—p. 82.
Retrograde Venography of Deep Leg Veins. J. C. Luke.—p. 86.
Malignant Hypertension Produced by Treatment with Desoxycorticosterone Acetate and Sodium Chloride. H. Selye, C. E. Hall and E. M. Rowley.—p. 88.
Subluxation of Ankle. G. F. Pennal.—p. 92.
Proctosigmoiditis Due to Endameba Histolytica. F. B. Bowman.—p. 95.
*Recurring Vesicular Eruptions of Hands. A. M. Davidson and A. R. Birt.—p. 97.
Optimistic Outlook for Rheumatic Fever Patient. D. Murnaghan.—p. 101.
Medical Officer's Battle Belt. C. M. Oake.—p. 104.
Functional Disorders of Intestines and Their Management. P. H. Sprague.—p. 105.
Brocq-Belot's Technic in Treatment of Superficial Skin Cancers. P. Brodeur.—p. 109.
History Taking. G. S. Young.—p. 110.
Analysis of Gastric and Duodenal Ulcers in Vancouver General Hospital. C. J. F. Phillipps-Wolley.—p. 113.
Evaluation of Roentgen Therapy in Disease of Paranasal Sinuses. C. L. Crank.—p. 117.

Recurring Vesicular Eruptions of Hands.—Davidson and Birt discuss the various types of recurring vesicular eruptions of the hands and present a classification based on the causative agent, which may act directly or from a distance. A survey was made of the records of the last 200 patients in whom the chief complaint was an eruption localized mainly to the hands and featured by the presence of vesicles. Dermatitis venenata accounted for three fourths of all the cases. If this group characterized by acute inflammatory reaction is excluded, the relative importance of the other conditions becomes evident. More than half of the remaining cases were diagnosed as cheiropompholyx and only about one third were dermatophytids. Because of the relatively high incidence of cheiropompholyx found here, an additional 134 cases were included from the records, making a total of 175 patients with cheiropompholyx. Cheiropompholyx occurred about evenly in the two sexes, was commonest in the third and fourth decades of life, most often affected those engaged in white collar occupations and appeared chiefly in hot weather. Many of these patients had hyperhidrosis of the hands and feet, and outbreaks were often associated with nervous strain. It would seem that there is ample justification for such a diagnosis as cheiropompholyx, that it can occur in the absence of mycotic infection, that there are probably constitutional reasons for the attacks and that the attacks are dependent to some extent on the weather. It is suggested that the incidence of dermatophytids recorded may depend to some extent on the interpretation given to the so-called mosaic fungus. This fungus is commonly found on microscopic examination of scrapings taken from the feet and mounted in potash. It is in reality not a fungus but is formed by flat rhombic crystals of cholesterol. It is possible that the interpretation given to the presence of the mosaic may account for some of the conflicting opinions regarding the part played by fungi in the production of vesicular eruptions of the hands.

Endocrinology, Springfield, Ill.

33:67-120 (Aug.) 1943

Nature of Pituitary Factor Stimulating Mammary Duct Growth. J. J. Trentin, A. A. Lewis, A. J. Bergman and C. W. Turner.—p. 67.
Evidence of Hypothalamic Control of Hypophysial Gonadotropic Functions in Female Guinea Pig. F. L. Dey.—p. 75.
Effects of Thyrotropic Hormone, Gonadotropic Factor, Pituitary Growth Substance and Insulin on Phosphatase Content of Rat Femurs. C. H. Whicher and E. M. Watson.—p. 83.
Growth and Metabolism of Young Hypophysectomized Rats Fed by Stomach Tube. L. T. Samuels, R. M. Reinecke and K. L. Bauman.—p. 87.
Effect of Hypoglycemia and Anoxia on Survival Period of Infant and Adult Rats and Cats. H. E. Himwich, J. F. Fazekas and E. Homburger.—p. 96.
Antagonism of Pituitary Adrenocorticotropic Hormone to Growth Hormone in Hypophysectomized Rats. W. Marx, Miriam E. Simpson, C. H. Li and Herbert M. Evans.—p. 102.
Increased Sodium Chloride and Water Intake of Normal Rats Treated with Desoxycorticosterone Acetate. Katherine K. Rice and C. P. Richter.—p. 106.

Illinois Medical Journal, Chicago

84:1-84 (July) 1943

Disturbances of Peripheral Circulation—Considerations on Definition of Shock. W. D. Gatch.—p. 12.

84:85-172 (Aug.) 1943

Treatment of Burns. H. N. Harkins.—p. 103.
Studies on Mercurial Diuresis: IV. Ammonium Chloride: Evaluation of Its Clinical and Chemical Effects. I. F. Volini, R. O. Levitt and N. L. Campione.—p. 107.
Rest: Physical and Mental. E. Jacobson.—p. 110.
Preliminary Report on Attempt to Control Tuberculosis at Chicago State Hospital. M. Greenberg and J. V. Edlin.—p. 114.
Mediastinitis Secondary to Cervical Pathology: 3 Case Reports. G. J. Greenwood.—p. 120.
Some Evaluations of Constitutional Versus Accidental Factors in Mental Disease. J. M. Radzinski.—p. 125.
Review of Amblyopia ex Anopsia. G. Morgan.—p. 132.

Journal of Nervous and Mental Disease, New York

98:115-228 (Aug.) 1943

*Electric Shock Therapy in Psychoses: Study of 100 Cases. J. Epstein.—p. 115.
Dysmorphopsia During Course of Sulfanilamide Therapy. N. Savitsky and H. Weitzen.—p. 130.
Protocol of an Individual Play Session. J. L. Despert.—p. 133.
Some Remarks on Russel Brain's Article Concerning Visual Object Agnosia. K. Goldstein.—p. 148.
Environmental and Heredity in Light of Modern Biology: Critical Review. B. Karpman.—p. 154.
Introduction to Growth Concept of Nervous Integration: (Application to Psychiatric Disease: Schizophrenia, and to a Somatic Disease: Renal Hypertension). D. E. Schneider.—p. 164.

Electric Shock Therapy in Psychoses.—Epstein records observations on electric shock treatments administered to 100 patients, of whom 37 had manic depressive insanity, 37 dementia precox, 16 involutional psychoses and 10 undifferentiated psychoses. The ages of the patients varied between 16 and 73 years. He conceives of electric shock as a mass irritation or stimulation to the cerebrum, the intensity of the reaction being somewhat proportionate to the amount and force of the current. Irritation of the autonomic nervous system is expressed by changes in the size and reaction of the pupils, rate and rhythm of the heart, blood pressure, respiration, sweating and the like. Motor irritation is expressed through muscular movements, changes in reflexes, and signs of pyramidal tract irritation. Mental reactions are in the nature of confusion, disorientation and amnesic or aphasic states. When the mass irritation is at its maximum, a convulsion is associated with these phenomena. The author empirically designated the degree of the reaction in terms of from 1+ to 4++. The 1+ is the mildest type of petit mal response and 4++ is a severe convulsion associated with prolonged apnea and frequent cardiac standstill. Convulsive reactions are most desirable for treatment purposes, but 3+ petit mal reactions can be satisfactorily utilized in certain instances. Patients with manic depressive insanity and those with involutional melancholia responded best to electric shock treatment. Dementia precox and mixed psychoses in which paranoid and delusional trends predominated responded poorly. When the duration of the illness was less than six months the general outlook for improvement or recovery was better, irrespective of the type of psychosis. Electrocerebral shock is more easily administered and less hazardous than insulin or metrazol.

Journal Neuropath. and Exper. Neurology, Baltimore

2:207-314 (July) 1943

Patchy Blastomatous Infiltration of Central Nervous System (Patchy Schwannosis?). A. Ferraro, G. A. Jervis and W. D. Sherwood. —p. 207.
Studies on Corpus Callosum: VII. Study of Language Functions (Tactile and Visual Lexia and Graphia) Unilaterally Following Section of Corpus Callosum. A. J. Akelaitis.—p. 226.
Influence of Electric Current Application on Structure of Brain of Dogs. J. H. Globus, A. van Harreveld and C. A. G. Wiersma. —p. 263.
Innervation of Blood Vessels of Rabbit's Iris. O. R. Langworthy and L. Ortega.—p. 277.
*Landry's Paralysis: Its Clinical and Pathologic Features. G. B. Hassin.—p. 293.
Cerebral Vascular Changes Associated with Azosulfamide and Sulfamethylthiazole Therapy. I. M. Scheinker.—p. 301.
Cerebral Patchy Demyelination: Case Report. E. K. Holt Jr. and C. Tedeschi.—p. 306.

Landry's Paralysis.—Hassin describes the case of a boy aged 12 who died after an illness of seventy-two hours with respiratory difficulties. Necropsy revealed disseminated inflammation of both the gray and the white substance of the brain, pons, cerebellum, medulla and spinal cord, with disappearance of many nerve cells especially in the spinal cord and the medulla; cloudy swelling of the liver, kidneys and the heart, which exhibited indistinct cross striations with increased amount of connective tissue about the arterioles and small focal and diffuse accumulations of inflammatory cells (leukocytes, histiocytes) and scattered hemorrhages. Microscopic studies were made on the muscles. The parenchymatous changes consisted of swelling and disruption of the muscle fibers into fibrils and waxy degeneration. There were inflammatory changes in the form of focal and diffuse infiltrations with fibroblasts and lymphocytes. The changes were confined to the diaphragm and the intercostal and pectoral muscles but were especially in evidence in the musculature of the heart. The author stresses that in this case of poliomyelitis microscopic changes were present not only in the central nervous system but also in some muscles. He thinks that involvement of the muscles may be the essential pathologic feature in those cases in which no changes were found in the nervous system (central, peripheral or sympathetic). Like the Brown-Séquard paralysis, Landry's paralysis is not a morbid entity but a symptom complex. In all cases with a clinical picture of Landry's paralysis the muscles, especially those of respiration, should be examined carefully. It is even more important to ascertain the condition of the heart, which may be responsible for the rapid and often fatal course.

Journal of Pediatrics, St. Louis

23:1-130 (July)1943

Standards for Basal Metabolism of Children from 2 to 15 Years of Age Inclusive. R. C. Lewis, Anna Marie Duval and Alberta Iliff.—p. 1.
Basal Metabolism in Rheumatic Children. E. E. Brown and Valentina P. Wasson.—p. 19.
*Immunization Against Rheumatic Fever. Valentina P. Wasson and E. E. Brown.—p. 24.
*Hematologic and Radiologic Study of Infants Receiving Massive Doses of Vitamin D in Rickets Prophylaxis. A. C. Ramhar, L. M. Hardy and W. I. Fishbein.—p. 31.
*Significance of Plasma Ascorbic Acid Levels in Nebraska Children. J. L. Gedgoud, Violet M. Wilder and J. A. Henske.—p. 39.
Pneumothorax in Newborn Infant: Report of 3 Cases. G. W. Salmon and G. B. Forbes.—p. 50.
*Treatment of Tonsillitis, Pharyngitis and Gingivostomatitis with Bismuth Salt of Heptadienecarboxylic Acid in Cocoa Butter Suppositories. S. Silber.—p. 59.
Sanatorium Method for Care of Rheumatic Heart Disease in Children. L. M. Taran.—p. 69.
Bronchoscopy in Newborn Infant. F. D. Woodward and W. W. Waddell Jr.—p. 79.
Infantile Scurvy: Case Report with Follow-Up Roentgenogram of Preexistent Healed Scurvy. D. Blitz.—p. 87.
Severe Sublingual and Paratracheal Hemorrhage in Hemophilia with Recovery Following Tracheotomy. Katharine H. Baird and M. S. Fox.—p. 90.
Strephosymbolia: Pediatric and Pedagogic Problem. C. W. Wyckoff. —p. 95.

Immunization Against Rheumatic Fever.—After nine years of experience with immunization, first with crude and later with attenuated hemolytic streptococcus toxin, against recurrences of rheumatic fever attacks, Wasson and Brown feel that they can state that the children suffer no harm and that in most cases they are much benefited by the prophylactic treatment.

Massive Doses of Vitamin D in Rickets Prophylaxis.—Rambar and his co-workers found that the use of a single massive oral dose of an electrically activated vaporized ergosterol, containing 600,000 U. S. P. units of vitamin D, was effective in preventing rickets in a group of infants studied during the fall and winter months. The use of repeated smaller doses of 100,000 U. S. P. units of the same antirachitic agent given monthly during this period (October to April) was effective also in preventing rickets in each of the infants studied. No toxic clinical or laboratory findings occurred in any of the infants receiving this type of prophylaxis.

Plasma Ascorbic Acid Levels in Nebraska Children.—Gedgoud and his collaborators show that attempts to evaluate levels of ascorbic acid in the plasma in children have led to a variance of opinions. Doubt has been expressed as to whether or not a level of 0.7 mg. per hundred cubic centimeters or more is actually the standard toward which to strive. The present investigation seeks to throw further light on these problems, utilizing children admitted to the University Hospital in Omaha from every part of the state of Nebraska and representing the lowest income group. On a daily intake of from 60 to 80 mg. of ascorbic acid a level of 0.7 mg. per hundred cubic centimeters or more was attained in 81 per cent of children entering the hospital without infection, regardless of the entrance value. The ease of attaining a value of 0.7 mg. per hundred cubic centimeters or more indicates that 36.4 per cent of "healthy" children were probably on a diet containing less than from 60 to 80 mg. daily and that levels of from 0.4 to 0.69 mg. per hundred cubic centimeters may still be considered "borderline." In 2 healthy infants entering with plasma levels in the borderline (0.4 to 0.69 mg. per hundred cubic centimeters) zone, 60 to 80 mg. of ascorbic acid daily did not raise the level beyond 0.7 mg. per hundred cubic centimeters over observation periods of from eighteen to nineteen days. This is an incidence of 2 in 96 cases. Of 12 children with infections, from 100 to 150 mg. daily was adequate to raise the plasma level to 0.7 mg. per hundred cubic centimeters or more in 11 over periods of from three to twenty-one days. Only 1 "healthy" child persisted in maintaining a low level of plasma ascorbic acid on an intake of from 60 to 80 mg. daily during eleven days of observation.

Treatment of Tonsillitis with Bismuth Salt of Heptadienecarboxylic Acid in Suppositories.—Thirty-two patients with tonsillitis, pharyngitis and gingivostomatitis were treated by Silber with suppositories containing the bismuth salt of heptadienecarboxylic acid. Subjective symptoms disappeared within twenty-four to forty-eight hours after treatment was begun. The temperature dropped within twenty-four hours and was normal in from thirty-six to forty-eight hours in most cases. Signs of local improvement appeared within twenty-four hours. In patients in whom attacks of a similar nature had occurred, whatever form of treatment was used, the duration of the illness was much longer than in those treated with bismuth. No more than two suppositories at twenty-four hour intervals were required in all but 1 patient. There were no local ill effects from the use of the suppositories. There were no toxic reactions to bismuth. The method has advantages over other methods, including the sulfonamides and arsphenamines, because of the ease of administration, the freedom from danger of toxic reactions, the sparing of the sulfonamides for conditions in which their specificity and definite indications more strongly require their use, and the avoidance of production of sulfonamide resistance or sensitivity by their use in conditions in which another medicament of proved equal or greater value is available.

Kentucky Medical Journal, Bowling Green

41:257-288 (Aug.) 1943

Some Tropical Diseases and Present War. D. R. Linicome.—p. 258.
Symposium on Vitamin C Deficiency: Scurvy. B. H. Hollis.—p. 264.
Pediatrician's View of Vitamin C Deficiency. Margaret A. Limper. —p. 269.
An Internist's View of Vitamin C Deficiency. V. P. Dalo.—p. 270.
Vitamin C: Cevitamic or Ascorbic Acid. A. E. Leggett.—p. 271.
Syphilis from View Point of Serologist. W. H. Allen.—p. 273
Cancer of Cervix. M. Casper and N. L. Casper.—p. 278.
Child Feeding in Low Income Groups. O. S. Ogden.—p. 280.
Puerperal Convulsions as Country Doctor Sees Them. R. H. Lewis. —p. 283.

Medical Annals of District of Columbia, Washington

12:249-288 (July) 1943

Presidential Address: ". . . a Watchful Gaze on the Horizon." F. W. Rankin.—p. 249.
Epilepsy—Clinical and Therapeutic Review. H. R. Litchfield.—p. 253.
Alleviation of Hypertensive Symptoms. S. H. May.—p. 260.
Portal Cirrhosis in Two Children of Same Family. W. M. Yater and W. T. Saccardi.—p. 264.

12:289-326 (Aug.) 1943

Progress of Medicine During War: Part I. L. B. McAfee.—p. 289.
Id.: Part II. V. Lebedenko.—p. 293.
Continuous Caudal Anesthesia in 100 Unselected Obstetric Cases. G. J. Ellis and J. B. Sheffery.—p. 295.
Calcinosis: Report of 2 Cases. B. E. Nunez and P. S. Arthur.—p. 301.

Military Surgeon, Washington, D. C.

93:117-236 (Aug.) 1943

Dental Service in British Army. A. B. Austin.—p. 117.
Bomb Blast Injuries. B. Burbank and J. H. Forsee.—p. 124.
Simple Field Test to Detect Quinine in Urine. V. H. Cornell and S. Kaye.—p. 133.
Shaking Methods Applied to Serologic Technic. J. P. Crawford and L. D. Hertert.—p. 135.
Heat Exhaustion. A. W. Wallace.—p. 140.
Observations on Air Sickness. T. Levy.—p. 147.
Officer-Instructor. F. Heraberg and R. E. Duke.—p. 151.
Plan for Standardization of Diagnosis and Treatment of Peptic Ulcer. D. T. Chamberlin.—p. 157.
Pterygopalatine Injection for Block Anesthesia of Maxilla. R. M. Rankow.—p. 164.
Pellegrini-Stieda Syndrome. G. H. Stein, N. H. Gladstone and F. C. Lowry.—p. 167.
Venereal Disease Problem United States Army: An Outline of Its History, Legislation and Points of Attack with Summary of Current Methods of Control. J. P. Pappas.—p. 172.
Osteochondritis Dissecans of Astragalus. M. C. Cobey.—p. 184.
Control of Postoperative Atonic Intestinal States with Prostigmine. W. B. Koufman.—p. 187.
Stereoscopy from Flat Plate. S. W. Scorse.—p. 190.
Night Flying. C. E. Ahlm.—p. 192.
Selective Breeding Habits of Mosquitoes as Correlated with Specific Gravity. C. O. Masters.—p. 194.
Field Expedient Method for Transporting Casualties Across Water Barriers. F. E. Rubovits.—p. 198.
Hot Foods to the Ward. J. P. McGinn.—p. 200.
Doctors at Arms: Hugh Mercer—"Brave and Worthy." J. M. Phalen.—p. 200.

New England Journal of Medicine, Boston

229:229-264 (Aug. 5) 1943

So-Called "Atypical Pneumonia" Among College Students. A. W. Contratto.—p. 229.
Inhalational Therapy in Treatment of Serious Respiratory Disease. M. S. Segal.—p. 235.
Toxic Psychosis and Death Associated with Potassium Thiocyanate Therapy: Report of Case. J. Solomon, M. Greenblatt and G. P. Coon.—p. 241.
Regional Anesthesia. M. J. Nicholson.—p. 244.

229:265-308 (Aug. 12) 1943

*Prothrombin Deficiency in Biliary Obstruction and Diseases of Liver. Freda K. Herbert.—p. 265.
Venous Pressure in Lower Extremities During Abdominal Operations. D. Davis, S. Gilman and A. S. Freedberg.—p. 272.
Advances in Malaria Research. Q. M. Geiman.—p. 283.

Prothrombin Deficiency in Biliary Obstruction and Diseases of Liver.—Maintenance of normal plasma prothrombin, according to Herbert, depends on an adequate supply and absorption of vitamin K. The deficiency can be rapidly corrected by injection of vitamin K or its analogues. Estimations of plasma prothrombin often give warning of the risk of postoperative hemorrhage in cases in which there is no spontaneous hemorrhage and no abnormality in coagulation time or bleeding time. The estimation of prothrombin is therefore a useful clinical test, indicating when prophylactic treatment is necessary. There is usually a fall in plasma prothrombin following operations on the biliary tract, so that a normal value before operation does not necessarily exclude the risk. She describes a two stage method of estimating plasma prothrombin. The method was used in 51 cases with obstructive jaundice and with serum bilirubin levels over 2.4 mg. per hundred cubic centimeters. Of these, 68 per cent showed hypoprothrombinemia, and in 30 per cent the titers fell below 50 per cent of the normal average. These results are closely similar to those obtained by Brinkhous, Smith and Warner and by Stewart and Rourke with the two stage method, although there is a slightly higher proportion of normal results in the present series. In 40 cases of liver disease studied in the present series 68 per cent showed hypoprothrombinemia, and in 25 per cent the titers fell below 50 per cent. In some cases hypoprothrombinemia was found when the jaundice was extremely slight. Cases are quoted of the restoration of the plasma prothrombin level to normal by treatment with menadione in cases of biliary obstruction, and of failure of this treatment when there was damage to the hepatic parenchyma. When normal plasma prothrombin exists before operation, hypoprothrombinemia and hemorrhage may develop a few days after the operation.

New Orleans Medical and Surgical Journal

96:1-42 (July) 1943

Ancient Processes in Scientific Age: Development of Usefulness. C. A. Aldrich.—p. 2.
History of Yellow Fever in New Orleans. R. M. Landry.—p. 6.
Personal Experiences and Reflections on Yellow Fever. R. Matas.—p. 10.
Common Diseases and Injuries of Eye. G. M. Haik.—p. 13.
Glomerulonephritis. E. Hull.—p. 16.
Nonpancreatic Glycosuria. J. B. Gwin.—p. 19.

96:43-86 (Aug.) 1943

Brucellosis. H. J. Schmidt.—p. 43.
Clinicopathologic Conference: New Orleans Graduate Medical Assembly. H. T. Karsner and L. Hamman.—p. 50.
History of Aviation Medicine. L. K. Knapp.—p. 62.
Glaucoma and General Practitioner. R. I. Lloyd.—p. 67.

Northwest Medicine, Seattle

42:207-240 (Aug.) 1943

Old and New Horizons of American Tropical Medicine. E. C. Faust.—p. 213.
*Vitamin A: Its Effect on Acne: Study of 100 Patients. J. V. Straumfjord.—p. 219.
Dissolution of Vesical Calculi. N. B. Rawls and E. S. West.—p. 226.
Hospitalization of Tonsil Fossae. L. C. Potter.—p. 229.

Effect of Vitamin A on Acne.—Straumfjord points out that explanations offered for the causation of acne are obscure and conflicting. The basic primary lesion of acne is a hyperkeratosis of the pilosebaceous follicle identical with the hyperkeratosis described in vitamin A deficiency. During the last five years approximately 300 cases of acne were seen at his clinic. Vitamin A was prescribed in high dosage. The data obtained from 100 patients were sufficient for analysis. These 100 patients were treated with a supplement of approximately 100,000 international units of vitamin A daily for six months and longer. Seventy-nine became free or nearly free from the eruption and only three were unimproved. The response of follicular hyperkeratosis and of acne to the administration of vitamin A suggests that their cause is the same, that both are cutaneous lesions of vitamin A deficiency.

Public Health Reports, Washington, D. C.

58:1077-1120 (July 16) 1943

Opening Remarks to Forty-First Annual Conference of United States Public Health Service with State and Territorial Health Officers. T. Parran.—p. 1077.
Community Services vs. Lost Man Hours. P. V. McNutt.—p. 1082.
Outlook for Coming Year. J. W. Mountin.—p. 1088
Opportunities in Newer Methods of Tuberculosis Case Finding. H. E. Hilleboe.—p. 1094.

58:1121-1164 (July 23) 1943

*Extent of Immunization and Case Histories for Diphtheria, Smallpox, Scarlet Fever and Typhoid Fever in 200,000 Surveyed Families in 28 Large Cities. S. D. Collins and Clara Councell.—p. 1121.

58:1165-1200 (July 30) 1943

Studies on Strains of Aerobacter Cloacae Responsible for Acute Illness Among Workers Using Low Grade Stained Cotton. B. H. Caminita, R. Schneiter, R. W. Kolb and P. A. Neal.—p. 1165.
Soap Which Indicates Presence of Mercury Fulminate. H. S. Mason and I. Botvinick.—p. 1183.

Extent of Immunization in Large Cities.—The study is based on a canvass of 213,931 households in twenty-eight cities of 100,000 or more population selected as representative of cities of that size in different geographic sections. Immunizations against scarlet fever and typhoid are negligible in frequency as compared with those against diphtheria and smallpox. In the preschool ages diphtheria immunizations are more

frequent than smallpox vaccinations, but after five years the reverse is true. At 8 years of age 61 per cent of the children had been immunized against diphtheria and 85 per cent had been vaccinated against smallpox at some time since birth. There is considerable geographic variation in the extent of immunization against these diseases. These twenty-eight large cities were divided into five geographic groups, Northeast, North Central, Intermediate, South and West. In diphtheria immunizations the West is lowest from birth through 7 years, but beyond that age the South is lowest; the Intermediate is highest from birth through 5 years, but after 6 years the Northeast and North Central are above the Intermediate. The South and Intermediate cities are highest in history of diphtheria cases. In smallpox vaccinations the Northeast, Intermediate and South all get above 90 per cent by about 8 years of age, but the North Central and particularly the West are low, the latter reaching only about 60 per cent. In history of smallpox cases the West is above any other section. In scarlet fever immunizations the West and North Central are far above the other sections, but no region gets above about 5 per cent. In scarlet fever cases the North Central and Intermediate are at the top. In typhoid immunizations the South is far above any other section, with the West second. The South shows the highest history of typhoid cases. The numbers of scarlet fever and typhoid immunizations are too few in any section to have any definite effect on the course of these diseases; the immunized, therefore, represent protection for certain individuals only, and the highest immunization rates show up where case rates are high enough to stimulate the use of the vaccine. When children were classified according to family income it was found that in the preschool ages the percentages of children who had been immunized against diphtheria and smallpox increase definitely with income. The same was true for diphtheria immunizations during the school ages, but there was little difference in smallpox vaccinations as between high and low incomes. Scarlet fever and typhoid immunizations increase with income in each of the three age groups under 15 years, indicating that these immunizations are largely the result of individual initiative rather than public programs.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

18:387-504 (June) 1943

Immunologic Relations Between Virus of Equine Encephalomyelitis of Colombia and of Venezuela. V. Kubes.—p. 402.
Weil-Felix Reaction and Proteus Group of Bacteria. A. Pomales Lebrón and P. Morales Otero.—p. 412.
Poisoning by Carbon Tetrachloride and Oil of Chenopodium. F. Hernández Morales and R. Díaz Rivera.—p. 434.
Studies on Syphilis in Puerto Rico: Review of Literature of Island and of Surveys Based on Blood Tests with Comments. O. Costa Mandry.—p. 452.

Review of Gastroenterology, New York

10:187-232 (July-Aug.) 1943

Emotional Factor in Peptic Ulcer. H. L. Bolen.—p. 187.
Colloidal Kaolin and Aluminum Hydroxide Gel (Kalum) in Management of Lower Bowel Conditions. M. G. Spiesman.—p. 191.
Clinical Significance of Concentration of Pepsin in Gastric Juice. H. Barowsky, R. Upham, L. B. Dotti and I. S. Kleiner.—p. 201.
Effectiveness of Syntrogel in Treating Gastric Disturbances Characterized by Hyperacidity, Flatulence, Indigestion and Pain. L. H. Turek.—p. 204.
Chase-Lau-Goldstein Syndrome—Galvanic Batteries in Human Mouth. H. I. Goldstein.—p. 206.
Sudden Death Following Use of Pontocaine as Gargle Anesthetic for Gastroscopic Examination. F. M. Hansen Jr. and C. L. Stealy.—p. 212.
Anatomic Basis for Study of Splanchnoptosis: Paths of Ascent to Erect Position from Birth to Fourth Year of Life and Their Relation to Splanchnoptosis and Body Form and Body Cavities. Agnes C. Vietor.—p. 213.

Rhode Island Medical Journal, Providence

26:107-142 (Aug.) 1943

Changing Views of Contagious Diseases. E. H. Place.—p. 115.

26:143-186 (Sept.) 1943

Massive Arsenotherapy of Early Syphilis. D. W. J. Bell and K. K. Gregory.—p. 153.
Luxury of Social Insurance. J. Farley.—p. 157.
Essentials of Diagnosis of Heart Disease. C. B. Leech.—p. 159.

Rocky Mountain Medical Journal, Denver

40:433-496 (July) 1943

Place of Physician and Hospital in Use of Blood Bank. O. S. Philpott.—p. 451.
Clinical Uses of Plasma and Whole Blood. W. Darley.—p. 452.
Selection and Care of Donors. Mildred Dester.—p. 455.
Processing and Preservation of Blood Plasma. M. R. Rymer.—p. 457.
Regeneration of Blood in Donors. E. R. Mugrage.—p. 459.

40:497-568 (Aug.) 1943

Thyroid Disease: Military Surgical Problem. K. C. Sawyer and J. S. Haley.—p. 516.
*Perforating Gallbladder: Report of 24 Cases. N. F. Hicken and Q. B. Coray.—p. 524.
Practical Application of Liver Function Tests. W. B. Yegge.—p. 529.
Coronary Occlusion. F. Mayner.—p. 533.
Sudden Death Following Injection of Mercurial Diuretic. G. G. Richards and L. G. Moench.—p. 535.

Perforating Gallbladder.—Hicken and Coray present a study of 24 cases of perforated gallbladders. The complication occurred in 25.6 per cent of all cases of acute cholecystitis which the authors have seen. They maintain that acute cholecystitis constitutes the same type of surgical emergency as does acute appendicitis, except that it is even more urgent. Many appendical crises would subside if treated conservatively, yet immediate surgery pays good dividends. In acute cholecystitis corrective operations should be employed as soon as the patient has been properly prepared. This requires but twelve to twenty-four hours to accomplish. Clinical signs and symptoms, laboratory data and roentgenologic studies have all been unreliable in determining which "acute gallbladders" will subside and which will become progressively worse; hence surgical intervention is imperative. Spinal anesthesia is the agent of choice. It is nontoxic to the liver, provides complete muscular relaxation and effectively collapses the distended intestines, thus expediting surgical explorations. The operation must be selected to fit each individual case. In every instance the common bile duct must be explored either roentgenographically by means of cholangiograms or surgically before disturbing the gallbladder. Whenever possible the gallbladder should be removed. The postoperative care is essential and aims at maintaining the essential physiologic processes at a normal level. Postoperative cholangiograms are used to determine the proper time for removing the choledochal drains. The mortality rate for this series was but 9 per cent. Acute cholecystitis and perforations of the gallbladder are both preventable complications of chronic cholecystitis. Operations during the chronic phase would eliminate these exacerbative reactions.

Southern Medical Journal, Birmingham, Ala.

36:543-602 (Aug.) 1943

Anatomic and Mechanical Features of Treatment of Fractures of Humerus. W. G. Stuck.—p. 543.
Evaluating Ureteral Splint. R. F. Sharp.—p. 549.
Bone Lesions in Acquired Tertiary Syphilis. H. C. Francis and R. H. Kampmeier.—p. 556.
Cardiovascular Allergy. H. M. Davison, J. C. Thoroughman and H. Bowcock.—p. 560.
Yardstick of Allergic Therapy. C. M. Stroud.—p. 567.
Milk Intolerance, Cause of Nutritional Entity: Clinical Study. P. A. McLendon and Dorothy S. Jaeger.—p. 571.
Reactions to Nirvanol, Phenytoin Sodium and Phenobarbital: Report of Case of Ectodermosis Erosiva Pluriorificialis Following Ingestion of Phenytoin Sodium. F. A. Ellis.—p. 575.
*Congenital Cerebral Aneurysms Lateralized by Electroencephalography. B. Woodhall and H. Lowenbach.—p. 580.
Essential Pentosuria (Xyloketosuria): Report of Case. R. C. Derivaux.—p. 587.
Carcinoma of Esophagus. F. D. Woodward.—p. 590.
Proctologic Significance of Diarrhea. H. G. Hummel.—p. 592.

Congenital Cerebral Aneurysms Lateralized by Electroencephalography.—Woodhall and Lowenbach describe a method of lateralization of the bleeding point in cases of spontaneous subarachnoid hemorrhage by the use of electroencephalography. The method is based on experiences in 3 cases showing a neurologic defect and in 3 selected cases without neurologic changes. The aneurysms in the first group were demonstrated at operation. In all of the cases the aneurysm was visualized by arteriography using 20 per cent thorium dioxide. The electroencephalographic signs which the authors regard as characteristic consist of a more or less evident asymmetry of amplitude, frequency and wave form between the tracings obtained from the two hemispheres, with the abnormal

findings present over the hemisphere containing the bleeding point. This abnormal activity may be due to relative cerebral anoxemia resulting from rupture of a congenital cerebral aneurysm, the common cause for such hemorrhages.

Texas State Journal of Medicine, Fort Worth

39:221-274 (Aug.) 1943

Rheumatic Heart Disease in Texas. G. M. Decherd Jr. and G. R. Herrmann.—p. 229.
Diabetes Insipidus. T. Findley.—p. 232.
What is Wrong with Chronically Tired Patient? L. H. Reeves.—p. 235.
Mental Rehabilitation of Patients with Arrested Tuberculosis. S. E. Thompson and W. W. Coulter Jr.—p. 238.
Gastric Failure in Middle Life. J. E. Johnson.—p. 239.
Roentgenologic Diagnosis of Carcinoma of Colon. L. W. Baird.—p. 243.
Increased Prevalence of Poliomyelitis in Texas and Possible Control Measures. G. W. Cox.—p. 247.
Complete Lacerations of Perineum. J. A. Heymann.—p. 248.

Virginia Medical Monthly, Richmond

70:383-432 (Aug.) 1943

Rheumatic Fever and Rheumatic Heart Disease in Virginia. P. D. Camp and Louise Galvin.—p. 397.
Industrial Development of Vitamins of B Complex. C. R. Addinall. —p. 402.
Ectopic Pregnancy: Report of 130 Cases. F. S. Johns.—p. 407.
Genesis of Disabling Heart Attack with Discussion of Symptoms. A. L. Tynes.—p. 410.
Wolff-Parkinson-White Syndrome. J. P. Lynch and R. G. McAllister. —p. 415.
Some Menstrual Disturbances. J. Natt.—p. 418.

War Medicine, Chicago

4:129-246 (Aug.) 1943

Etiologic Factors in Adjustment of Men in Armed Forces. D. L. Steinberg and Mary Phyllis Wittman.—p. 129.
*Use of Plastic Gels as Vehicles for Applying Sulfonamide Compounds to Wounds. R. Hare and Eina M. Clark.—p. 140.
*March Fractures of Lower Extremity: Report of Case of March Fracture of Cuneiform Bone. H. M. Childress.—p. 152.
Medical Aspects of Accidents and Mistakes in Industrial Army and in Armed Forces. F. Dunbar.—p. 161.
Retention of Atabrine in Animal Body: Excretion in Bile and Urine and Effect on Cholic Acid Output. J. H. Annegers, F. E. Snapp, L. Paskind, A. C. Ivy and A. J. Atkinson.—p. 176.
Head Injury: Review of Literature.—H. H. Merritt.—p. 187.
Liquid Adhesive. W. Grossmann.—p. 216.

Plastic Gels as Vehicles for Sulfonamides.—Hare and Clark attempted to find a suitable method for the first aid treatment of persons wounded in battle who may be compelled to lie unattended for days before proper surgical treatment becomes available. Sulfanilamide alone or incorporated in a vehicle leaves much to be desired, for it is absorbed within the first twenty-four hours. Sulfathiazole without a buffer is much more slowly absorbed than sulfanilamide because it is so much less soluble. It also acts on a greater variety of clostridia than sulfanilamide and may even have some action on staphylococci. When the unbuffered drug is employed, an effective potential is maintained for only sixty hours and the formation of crystals is a great drawback. When the drug was incorporated in a plastic material, such as methyl cellulose, the effective concentration was maintained for much longer periods and crystal formation was not observed. Another advantage is its ability to absorb three to eight times its own weight of serum or plasma. This will tend to facilitate soaking up of oozing blood and serum; in this process the vehicle swells, and, if a tight bandage is applied, the pressure exerted by the swelling may prevent further capillary bleeding and may even arrest venous hemorrhage. Methyl cellulose is freely soluble in water and can be picked or washed out at débridement. Because methyl cellulose is not absorbed by plasma or other tissue fluids, primary or even secondary suture cannot be carried out until it has all been removed. Autoclaving decomposes sulfathiazole, but hot air sterilization has no deleterious effect. Satisfactory sterilization may be obtained by heating in hot air at a temperature of 140 C. for three hours.

March Fractures of Lower Extremity.—Childress points out that march fracture has long been considered synonymous with march foot. Recently, more attention has been given to similar fractures occurring in the long bones of the lower extremity. Terms used to designate this lesion include incomplete, exhaustion, insufficiency, false, spontaneous, creeping, chronic, fatigue, stress, insidious and soldiers' fracture. March fracture of the foot is the most common of all march fractures. Next in frequency are march fractures of the tibia. March fracture of the fibula usually occurs near the proximal or the distal end of the bone. March fractures of the femur occur in the lower portion of the shaft and at the neck. Occasionally the pelvic bones may develop march fractures. Regardless of the bone involved in march fracture, the onset and progression are much the same. The lesion is produced by repeated minimal trauma, which by summation causes an overloading of the functional capacity of an otherwise normal bone. This occurs particularly in soldiers carrying packs and in workers performing heavy labor. The onset may be acute but is usually insidious. The pain is dull and vague at first and is initiated by prolonged periods of weight bearing. Rest gives complete relief. With continued activity the pain increases in severity. A localized swelling of soft tissues develops in association with tenderness on deep pressure. The overlying skin may be slightly reddened, with increased heat. Immediately after onset roentgenograms of the involved bone usually do not reveal anything abnormal. A faint incomplete fracture line may be demonstrated. In two to three weeks callus is noted. Diagnosis in many cases is not made until a large amount of callus has been formed. In the foot this osseous mass may exert pressure on adjacent soft structures and thus produce considerable pain. Complete rest of the part is indicated in order to decrease the size of the callus; also to prevent a refracture adequate support must be maintained until full healing has been obtained. Osteogenic sarcoma, Ewing's tumor, nonsuppurative osteomyelitis and syphilitic periostitis should be differentiated from march fracture. Before a biposy is done the bone should be observed clinically and roentgenographically during and after a few weeks of complete rest of the affected part. To decrease the incidence of this fracture a gradual physical build-up should be given to both army recruits and formerly unemployed civilian workers. The author reports a case of march fracture of the cuneiform bone. His review of the literature failed to disclose another solitary march fracture of the cuneiform bone. He suggests that many may have occurred but have been treated under other diagnoses.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

51:305-348 (Aug.) 1943

Ureteral Injury During Gynecologic Surgery. T. W. Adams.—p. 305.
Foreign Bodies in Air Passages of Children. P. M. Frederick and J. G. Verberkmoes.—p. 325.
Cesarean Section in Portland, Oregon, During 1942. G. P. Lee. —p. 330.
Roentgen Diagnosis of Fractures. M. D. Sachs.—p. 335.
Concerning Nature of Intracellular Inclusions and Their Significance in Gynecology. A. E. Taft.—p. 342.

Wisconsin Medical Journal, Madison

42:749-880 (Aug.) 1943

Treatment of Cardiovascular Emergencies in Home. F. D. Murphy. —p. 769.
Hospital Treatment of Cardiac Cases. A. G. Koehler.—p. 775.
Kenny Concept of Infantile Paralysis. W. H. Cole.—p. 778.
Wisconsin Experience with Kenny Treatment Methods. H. M. Coon. —p. 783.
Modern Treatment of Acute Osteomyelitis. A. C. Schmidt.—p. 785.
Treatment of Painful Feet: How to Meet the Problem. R. P. Montgomery.—p. 787.
Why Should Cancer Cases be Reported? W. C. Koettel.—p. 790.

Yale Journal of Biology and Medicine, New Haven

15:769-928 (July) 1943. **Partial Index**

Simple Method of Evaluating Fitness in Boys: Step Test. J. R. Gallagher and L. Brouha.—p. 769.
Toxicity of Chlorinated Hydrocarbons. Alice Hamilton.—p. 787.
Factors Associated with Lesions of Brain That Follow Intravenous Injection of Thromboplastic Substance. R. Katzenstein and H. Arnold. —p. 803.
Sulfonamide Activity as Influenced by Variation in *pH* of Culture Media. A. H. Brueckner.—p. 813.
Experimental Hypothalamic Hyperphagia in Albino Rat. J. R. Brobeck, Jay Tepperman and C. N. H. Long.—p. 831.
Role of Liver in Synthesis of Fatty Acids from Carbohydrate. Virginia C. Dickerson, J. Tepperman and C. N. H. Long.—p. 875.
Left Subdiaphragmatic Abscess: Report of Case. G. J. Connor.—p. 905.
Study of Familial Spread of Hemophilus Influenzae, Type B. P. G. Good, Mildred D. Fousek, Marya F. Grossman and P. L. Boisvert. —p. 913.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

55:169-198 (July) 1943

Serologic Change Occurring During Short Courses of Neoarsphenamine and Bismuth, Such as Were Possible While Patients Stayed at Venereal Diseases Center for African Soldiers. W. A. Young.—p. 169.
Clinical Notes on 2 Cases of Acanthosis Nigricans. A. G. Peterkin and E. C. Jones.—p. 185.

British Journal of Urology, London

15:39-78 (June) 1943

History of Urethral Stricture. H. L. Attwater.—p. 39.
Operation Used for an Impassable Stricture of Penile Urethra. T. J. D. Lane.—p. 52.

British Medical Journal, London

2:127-158 (July 31) 1943

Typing of Paratyphoid B Bacilli by Means of Vi Bacteriophage. A. Felix and Bessie R. Callow.—p. 127.
Value of Phage Typing in Investigation of an Outbreak of Paratyphoid B Fever. J. R. Hutchinson.—p. 130.
*Two Stage Amputation: Primary Planned Amputation in Presence of Sepsis. E. A. Jack and J. Charnley.—p. 131.
Pasteurization of Milk and Infant Mortality Rates in Toronto, Vancouver and Victoria. A. Brown.—p. 133.
Ocular Criteria of Deficiency of Riboflavin. M. K. Gregory.—p. 134.
Rupture of Rectus Abdominis Muscle During Pregnancy. R. C. Thomas.—p. 136.

Two Stage Amputation.—Jack and Charnley show that the procedures at present in vogue for amputation accept infection of the stump as inevitable. The guillotine seeks to sidetrack it, the loose closure method to minimize its effects. The two stage amputation employs two principles. First, to combat implanted or invading organisms, sulfanilamide powder is introduced into the wound in large quantity to maintain a high local concentration. Second, to counter the predisposing conditions a large dry gauze pack is sutured under the flaps with its ends left projecting from the corners of the incision. The pack must be large so that the flaps are sutured over it under moderate tension approximating that obtaining in normal tissues; it must be of dry gauze so that it is absorbent. There is an outpouring of serum from the raw surfaces, which soaks into the pack. By the capillary action of the gauze it is conducted out. At the same time a proportion of the sulfanilamide is dissolved by the serum and the pack becomes a reservoir of sulfanilamide in high concentration. The tension of the flaps over the pack maintains the circulation as normal as possible, and at the same time an even pressure is produced over the whole surface of the wound, thus preventing edema and promoting effective hemostasis. The first stage starts as a standard flap amputation at the site of election. The second stage should be performed four or five days later. The two stage method has been used in 26 cases. Primary healing without complication was obtained in 18. In 3 others the skin margins slid apart for about half an inch but healed without sepsis when they were drawn together with strapping. Three cases developed sepsis at the skin edges, which did not interfere with the healing. Only 2 cases developed severe infection with suppuration. The two stage amputation has yielded impressive results. Should it fail in its object of preventing infection, no harm has been done. The two stages of the procedure fit logically into the average time lag between forward area surgery and arrival at a base hospital.

2:159-190 (Aug. 7) 1943

Some Problems in Control of Infectious Diseases. R. Cruickshank.—p. 159.
*Early Treatment of War Wounds of Upper Part of Face. M. C. Oldfield.—p. 163.
Specific Gravity of Cerebrospinal Fluid, with Special Reference to Spinal Anesthesia. W. Etherington-Wilson.—p. 165.
Traumatic Arterial Spasm. C. W. Clark.—p. 167.
Common Cause of Diarrhea, Vomiting and Dehydration in Infants. P. W. Leathart.—p. 168.

Early Treatment of War Wounds of Upper Part of Face.—Oldfield emphasizes the following six elementary principles in the early treatment of wounds of the upper part of the face: 1. Cleanse the wound most thoroughly with soap and water, peroxide and saline solution. 2. Never excise a facial wound. 3. Save the framework of the face even if it is loose; sacrifice a bony fragment only if it is completely detached from all the surrounding tissues. 4. If there has been any skin loss, pack the wound with sulfanilamide powder and leave it open. 5. If there has been no skin loss and the wound is recent, insert fine silk stitches and remove them within three days. 6. In the face, never insert a few big stitches under tension; they usually lead to serious septic complications and will always be followed by an irreparable scar, which will remain a disfigurement for life.

Journal of Physiology, Cambridge

102:1-126 (June 30) 1943

Effect of Muscular Exercise on Serum Cholinesterase Level in Normal Adults and in Patients with Myasthenia Gravis. H. B. Stoner and A. Wilson.—p. 1.
Effect of Temperature on Blood Flow and Deep Temperature in Human Forearm. H. Barcroft and O. G. Edholm.—p. 5.
Sympathetic Vasoconstrictor Tone in Human Skeletal Muscle. H. Barcroft, W. McK. Bonnar, O. G. Edholm and A. S. Effron.—p. 21.
Histamine in Nervous Tissue. H. Kwiatkowski.—p. 32.
Seasonal and Annual Changes in Calcium Metabolism of Man. R. A. McCance and E. M. Widdowson.—p. 42.
Effects of X-Rays on Acetylcholine Solutions Showing Dilution and Protection Phenomena Found for Enzymes. W. M. Dale.—p. 50.
Oxygen Affinity of Human Maternal and Fetal Hemoglobin. E. F. McCarthy.—p. 55.
Experiments on Blood Supply of Nerves. F. H. Bentley and W. Schlapp.—p. 62.
Effect of Pressure on Conduction in Peripheral Nerve. F. H. Bentley and W. Schlapp.—p. 72.
Determination of Oxygen Combining Power of Blood with Barcroft Differential Manometer. Q. H. Gibson.—p. 83.
Periodic Changes in Respiratory Depth, Produced by Changes in Lung. R. V. Christie and G. W. Hayward.—p. 88.
Mechanism of Vasomotor Reflexes Produced by Stimulating Mammalian Sensory Nerves. G. Gordon.—p. 95.
Effects of Iodoacetic Acid, Glyceraldehyde and Phosphorylated Compounds on Small Intestine of Rabbit. W. Feldberg.—p. 108.
Pancreozymin, Stimulant of Secretion of Pancreatic Enzymes in Extracts of Small Intestine. A. A. Harper and H. S. Raper.—p. 115.

Lancet, London

2:91-118 (July 24) 1943

Dehydration. N. Morris.—p. 91.
Anaerobic Infections of War Wounds in Middle East. J. D. MacLennan.—p. 94.
Serial Sedimentin Indexes, Measure of Progress in Pulmonary Tuberculosis. G. Day.—p. 99.
Supersaturated Sulfathiazole Solutions for Local Application. J. A. De Loureiro.—p. 102.
*Generalized Vaccinial Reactions in Allergic Subjects. L. S. P. Davidson and L. J. Davis.—p. 103.

Generalised Vaccinial Reactions in Allergic Subjects.—Davidson and Davis report observations during the recent small outbreak of smallpox in the Edinburgh area, when a large proportion of the population was vaccinated or revaccinated. Four patients manifested generalized complications after vaccination in whom there was presumptive evidence of an underlying allergic diathesis. The ages of the patients varied between 4 and 40 years. The abnormal reactions appeared from eight to ten days after the vaccination. Purpuric manifestations appeared in 3 of the patients, 2 of whom developed well defined edema at the same time. The remaining patient showed generalized vaccinia. These abnormal reactions may be related to an allergic tendency, since in case 1 there was a personal and in case 2 a familial history of allergy, and in the other 2 cases there were clinical grounds for postulating the presence of abnormal sensitivity.

2:119-146 (July 31) 1943

*Injuries Produced by Blast in Water. J. C. Goligher, D. P. King and H. T. Simmons.—p. 119.
Anaerobic Infections of War Wounds in Middle East. J. D. MacLennan.—p. 123.
Phytic Acid and Iron Absorption. R. A. McCance, C. N. Edgecombe and E. M. Widdowson.—p. 126.
*Suprapubic Catheterization for Paralysis of Bladder in Spinal Injury. E. W. Riches.—p. 128.

Injuries Produced by Blast in Water.—Goligher and his associates report a clinical and pathologic study of 17 underwater blast injuries. All of the men were suffering from injury to the abdomen. The lesions found were confined almost exclusively to the intestine, stomach and lower end of the esophagus and consisted of intramural hematomas and perforations. Per-

forations occurred only in the small intestine and were present in 9 cases. The only constant sign of injury outside the alimentary tract itself was a retroperitoneal hemorrhage behind the right colic flexure. The solid abdominal organs escaped injury. Seven cases showed signs of injury to the lungs, and the pulmonary hemorrhages were identical with those described in bomb blast casualties. In the differentiation of perforating from nonperforating abdominal lesions the features of diagnostic value were persistent severe abdominal tenderness and rigidity together with elevation of the pulse rate of patients with perforations. In cases in which perforating injuries were diagnosed or could not be excluded, laparotomy was performed. Because of the associated lung injuries, infusions of plasma and blood were as far as possible avoided, but it was not always practicable to dispense with them entirely. Of the 9 patients with intestinal perforation, 2 were too ill to stand operation and died, and 7 were operated on, with four deaths. Of the 8 cases with nonperforating lesions, 6 were treated conservatively with one death (from shock immediately after admission), and in 2 in which the diagnosis was doubtful laparotomy was done with recovery. The causes of death were shock, the lung injury and in 1 case peritonitis.

Suprapubic Catheterization for Paralysis of Bladder in Spinal Injury.—Riches deplores that there is still no agreement on the treatment of a bladder paralyzed as a result of spinal injury. He shows that a safe and rapid method of suprapubic catheterization has now been devised; it has been used successfully as a means of bladder drainage in more than 20 surgical cases and in a few cases of spinal injury. The simple instrumentarium and the technic are described. After paralysis from spinal injury the bladder should be allowed to distend. When it is distended, suprapubic catheterization should be performed. Tidal drainage should be added after two days. The use of a urethral catheter in the treatment of the paralyzed bladder should be forbidden.

Medical Journal of Australia, Sydney

1:549-570 (June 19) 1943

Surgeon as Whaleship Owner. W. E. L. H. Crowther.—p. 549.
Note on Identification of Skulls by X-Ray Pictures of Frontal Sinuses. A. Schuller.—p. 554.
Causes of Blindness in Children. J. C. Halliday.—p. 556.
Deep X-Ray Treatment of Gas Gangrene: Recovery. A. M. Davidson. —p. 557.
*Observations on Treatment of Certain Types of Fractures and Dislocations of Cervical Part of Spine. E. F. West.—p. 557.

1:571-592 (June 26) 1943

Pneumococcic Meningitis of Otitic Origin: Recovery Following Chemotherapy and Operation. T. J. F. Frank.—p. 571.
Studies on Tonicity in Dextrose Sodium Citrate Solutions. P. W. Gill. —p. 573.
Significance of Glycosuria in Absence of Diabetic Symptoms. A. B. Corkill and J. P. Marks.—p. 577.

Fractures and Dislocations of Cervical Part of Spine.—West observed a series of cases of injuries of the cervical portion of the spine, chiefly following accidents in the surf. He gives a detailed description of 2 cases to illustrate the management of such lesions. He recommends a light type of plaster cast, which he describes and illustrates. A short period of immobilization and the avoidance of heavy types of plaster casts will lessen the incidence of neuroses in these cases.

South African Medical Journal, Cape Town

17:183-198 (June 26) 1943

Soviet Medicine in Wartime. N. Graschenkov.—p. 185.
*Table Knife Lying in Peritoneal Cavity for Five Years. L. Gordon. —p. 187.

Table Knife Lying in Peritoneal Cavity for Five Years.—Gordon reports the history of a truck driver who complained that for the last three months he had experienced discomfort in the region of the right ischiorectal fossa. A tender lump was found near the skin in the right ischiorectal fossa. X-ray examination showed a table knife in the abdomen with the point near the skin at the tender spot. He had been admitted to the hospital five years previously suffering from a stab wound of the upper abdomen. At that time the symptoms suggested an injury to the lung. The chest was x-rayed and nothing abnormal was noted. The entrance scar was situated just below the left costal margin 2 inches from the midline. X-ray examination now showed the handle of the knife in the upper end at McBurney's point and the point of the blade in the right ischiorectal fossa. No evidence of damage to the stomach or the intestine was found when the abdomen was opened. The knife was lying free in the peritoneal cavity. A sausage shaped roll of omentum completely surrounded the knife, forming a sheath extending down into the pelvis. This sheath was opened and the knife was extracted without difficulty. The patient was discharged on the seventeenth day. The blade of the knife, which was 8 inches long, was as bright as if it had just been polished. There was no evidence of any rusting, nor had the color of the bone handle changed.

Schweizerische medizinische Wochenschrift, Basel.

72:1401-1428 (Dec. 19) 1942. Partial Index

Diabetes Insipidus and Simmonds' Syndrome After Encephalitis. E. Glanzmann and C. Wegelin.—p. 1401.
*Present Vitamin Supply for Pregnant and Nursing Women. W. Neuweiler.—p. 1408.
*Sulfathiazole Therapy of Acute Otitis Media. A. M. Hild.—p. 1410.
Clinical Investigations on a Stable, Water Soluble Vitamin K Preparation. H. J. Wespi.—p. 1414.
*Does Fetus in Utero Become Involved in Poliomyelitis During Pregnancy? Lotti Hürny.—p. 1417.

Vitamin Supply for Pregnant and Nursing Women.—Neuweiler studied the vitamin supply of pregnant and nursing women. Although many of these women receive some added rations, these will be divided among a family and the pregnant or nursing woman will receive only a part of the ration. Neuweiler determined the vitamin C content of the blood according to the method of van Eekelen and Emmerie in three groups of 40 women each. One group comprised nonpregnant women, one pregnant women and one nursing women. The results were compared with those obtained in similar groups in 1937 and 1938. During the summer of 1942 the values were much lower than they had been during the summer of 1938 and during the winter of 1937. The values were most unfavorable in the blood of nursing mothers. Investigations on the vitamin C content of breast milk, however, revealed practically the same values as during the prewar years. Apparently the danger of hypovitaminosis in the nursing mother is greater than in other women because of considerable elimination into the milk. Physicians should inform themselves regarding the diets of pregnant and nursing women and should prescribe vitamin preparations if the diets seem inadequate. Attention should be given not only to vitamin C but also to vitamins of the B group and to vitamin A.

Sulfathiazole in Otitis Media.—Hild treated 180 cases of febrile acute otitis media with sulfathiazole; 168 responded favorably, while 12 were uninfluenced. Antrotomy was necessary in 7 cases. It was found that in the cases treated with sulfathiazole the time necessary for cure was shortened by one third in comparison with the cases in which no sulfathiazole was employed; surgical treatment was required only one fourth as frequently. Sulfathiazole was administered only in the form of tablets; the oral administration answered all requirements. The simultaneous administration of 25 per cent solution of nikethamide counteracted the occasional occurrence of nausea and vomiting. The total dose of sulfathiazole was 16 Gm. for adults, 9 Gm. for children between 2 and 12 years and 6 Gm. for children less than 2 years of age. These doses were given in the course of six days, larger doses being given on the first two days. Serious secondary effects were not observed. The sulfathiazole was particularly effective during the first five days after the onset, but even during the later stage noticeable effects were obtained. Inspection of the tympanum and testing of the hearing by whispering should be done during the entire course of the chemotherapy, because these tests reveal an otherwise unnoticed advancement of the disease process and make possible the consultation of a specialist in doubtful cases.

Poliomyelitis During Pregnancy.—Hürny reports the histories of 2 women who developed acute anterior poliomyelitis at the end of their pregnancy. In both patients cesarean operations were done. All three children (1 set of twins) were and remained healthy, but both mothers died as the result of Landry's type of poliomyelitic paralysis shortly after the

cesarean operation. This indicates that the placental barrier is impermeable for the virus of poliomyelitis. The literature contains only few records of similar cases. Three of these are cited by the author. In these the children also remained healthy. The transmission of antigens was examined in only 1 of the cases reported in the literature. In this instance, in which the child was born four and one-half months after onset of the poliomyelitis, the antigen titer was unusually high.

Medicina, Madrid

11:357-439 (May) 1943. **Partial Index**

*Cerebral Symptoms of Lymphogranulomatosis (Hodgkin-Sternberg's Disease). J. R. Garcia Martin.—p. 386.
Vascular Collapse in Obstetrics. R. Garcia Pastor.—p. 394.

Cerebral Symptoms of Lymphogranulomatosis.—Garcia Martin directs attention to the cerebral form of lymphogranulomatosis, of which a case is reported. A man aged 32 presented typical lymphogranulomatosis of two years' duration. The diagnosis was verified by a lymph node biopsy. In the course of the disease there developed anarthria, which did not improve on administration of arsenicals and roentgen therapy. Three months later there were irritability, mental confusion and acute epileptiform attacks. Lymphogranulomatosis is caused by a virus with a selective localization in the lymph nodes or in the entire lymphatic system and rarely in the nervous tissue. In the reported case the virus was localized in the cortical centers of speech and in the psychomotor zones.

Prensa Médica Argentina, Buenos Aires

30:787-830 (May 5) 1943. **Partial Index**

*Coagulation of Blood in Intermittent Claudication and Gangrene of Lower Limbs. A. V. Di Ció and R. Bay.—p. 789.
Mycotic Ulcer of Cornea. F. L. Niño.—p. 797.
Heart Disease and Liver Function. M. Bernstein, E. B. Le Win and S. Simkins.—p. 816.

Coagulation of Blood in Intermittent Claudication and Gangrene of Lower Extremities.—Di Ció and Bay studied 86 patients with peripheral vascular diseases. Lee and White's technic, in which coagulation between five and eight minutes is considered normal, was used. Tanturi-Banfi-Quick's modified technic for determining the time of formation of prothrombin and the concentration of prothrombin in the blood, in which a time of formation of prothrombin between eighteen and twenty seconds and a concentration varying between 80 and 110 mg. per hundred cubic centimeters of blood are considered normal, were also used. The time of blood coagulation was diminished in 10 of 19 cases of intermittent claudication without arterial blood hypertension, in 22 of 32 cases of intermittent claudication with arterial blood hypertension, in 4 of 7 cases of intermittent claudication with intestinal parasitism, in 10 of 18 cases of gangrene of the lower limbs without arterial hypertension and in 6 of 10 cases of gangrene of the lower limbs with arterial blood hypertension. Blood coagulation time was normal in the remaining cases in each group. The time of formation of prothrombin and the concentration of the substance in the blood were normal in all cases. The authors believe that the diminished blood coagulation time is due to a diminished concentration of heparin and other anticoagulating substances in the blood.

Rev. Brasileira de Oto-Rino-Laringologia, São Paulo

11:5-148 (Jan.-Feb.) 1943. **Partial Index**

*Otitis Media and Its Complications in Diabetic Patients. F. de Paula Pinto Hartung.—p. 5.
Total Destruction of Tongue Due to Carcinoma. E. Moreira.—p. 97.

Otitis Media in Diabetic Patients.—De Paula Pinto Hartung directs attention to the grave prognosis of acute otitis media in diabetic patients. The success of therapy depends on maintaining the patient on a correct antidiabetic diet and on proper doses of insulin and sulfanilamide in preparation for operation when the latter is indicated. Coma following on the appearance of labyrinthine symptoms and in the course of pneumococcic meningitis complicating the otitis media does not constitute a contraindication to an operation, which should be performed without delay. A man aged 35, with diabetes, had an attack of acute otitis media. He improved on sulfanilamide therapy, insulin and proper diet. A mastoidectomy performed for symptoms of mastoid involvement was followed by improvement which lasted two months, after which the patient developed acute meningitis and coma. The cerebrospinal fluid was under increased pressure, was purulent and contained pneumococci. The patient recovered after an operation, sulfanilamide and insulin therapy.

Deutsche medizinische Wochenschrift, Leipzig

68:365-392 (April 10) 1942. **Partial Index**

Hormone Therapy During Childhood. G. Bessau.—p. 365.
Treatment of Hormonal Disturbances with Estrogenic Stilbestrol Preparations. O. Bauer.—p. 369.
*Morphology of Symptom of Infantile Little Finger. Maria Lutz. —p. 371.
*Development of Malarial Sporozoites in Warm Blooded Animals. W. Schulemann.—p. 374.
Occurrence of Wallgren's Epidemic Serous Meningitis in Hungary. R. von Engel.—p. 379.

Symptom of Infantile Little Finger.—Lutz points out that the symptom of infantile little finger was first described by Du Bois in 1926 under the term "auriculaire infantile" and was identified by him as a sign of congenital syphilis. After citing and evaluating subsequent reports on this sign, the author describes her own studies on the basis of roentgenograms. In a normal hand there exists a definite ratio between the different parts of a finger as well as between each part of a finger and the corresponding part of the other fingers. The shortening of a bone becomes manifest in a shifting of this ratio. The author investigated these ratios roentgenologically in 7 normal hands and in 20 hands with the symptom of infantilism of the little finger. She emphasizes that the shortening of the little finger is due either to a noticeable isolated shortening of the fifth metacarpal or of the middle phalanx of this finger or it results from a summation of minimal shortenings of several bones. Roentgenoscopy shows that in the normal hand the second interphalangeal cleft of the little finger is considerably distal to the first interphalangeal cleft of the fourth finger. In the hand with the little finger sign, however, the two clefts are in the same line or the little finger cleft is proximal to that on the fourth finger. Roentgenologic examination is not always necessary, since Hissard's description of the relative shifting of the skin folds usually indicates the bone shortening. Shortening of the fourth finger is occasionally added to the infantilism of the little finger. If such bone metaphasias are unilateral they can be designated as finger asymmetry, which is likewise a sign of congenital syphilis.

Development of Malarial Sporozoites in Warm Blooded Animals.—Schulemann points out that experimental studies by Missiroli and by Kikuth and Mudrow proved that the sporozoites of the malarial plasmodia do not attack the erythrocytes of warm blooded animals directly but pass through an intermediate development. Considerable discussion arose regarding the intermediate stages. The author made studies with an improved technic. Salivary glands of Culex pipiens which contained sporozoites of Plasmodium cathemerium were crushed with canary serum. This suspension was stained with trypan violet and then injected into the subcutaneous fat of canaries. The injected area was excised twenty-four, forty-eight, sixty-three and ninety-nine hours after injection. At the end of twenty-four hours the majority of sporozoites appear as slender forms with one but mostly two and rarely three chromatin granules. In some of the sporozoites the protoplasm shows slight swelling. In the sporozoites that have two chromatin granules it can be seen that the granules become separated and shift to the ends. In injected areas removed later (after forty-eight, sixty-three or ninety-nine hours) the swelling of the protoplasm increases continuously. The chromatin granules likewise grow; the lacing in and the later complete division of the protoplasm between the chromatin granules progresses and division follows. The resulting mononuclear round forms develop into polynuclear forms. The sectioned specimens show that the described sporozoites are extracellular. Later the development is extracellular as well as intracellular. The author thinks that it is too early to decide definitely whether and in what manner sporozoite development takes place, but observations so far seem to prove Missiroli's claim that there is a division of sporozoites. The later development is much more varied than has hitherto been believed.

Book Notices

Allergy. By Erich Urbach, M.D., Chief of Allergy Service, Jewish Hospital, Philadelphia, with the collaboration of Philip M. Gottlieb, M.D., Associate on Allergy Service, Jewish Hospital. Fabrikoid. Price, $12. Pp. 1,073, with 390 illustrations. New York: Grune & Stratton, 1943.

This is the most ambitious work on allergy in recent years. The massiveness of this volume of more than a thousand pages, with 2,262 references appearing as footnotes, indicates the thoroughness of the work. The illustrations are excellent in reproduction and choice. It is a reference work which the specialist in allergy will appreciate for its thoroughness in both allergy and applied immunology. Whether physicians other than specialists will equally appreciate it will depend on the degree of their interest in allergy and immunology. The very completeness with which the literature is covered and the thoroughness of many of the discussions may overwhelm the reader who is not definitely interested in these subjects.

This book is divided into three parts. In part I, covering the first 283 pages, the author discusses the fundamentals of allergy from the point of view of the immunologist. An excellent and clear presentation with a thorough review of the literature is given of this subject. However, the weakness of this entire work first appears in this section. The author rejects Pirquet's concept of allergy as too broad. For it he substitutes his own classification—a very complex one requiring many obscure terms coined by the author or by other Europeans but not generally used or accepted in the American literature. The following are a few examples: pathergy, allergization, deallergization, paralergy, metallergy and many other newly coined or generally unaccepted terms. Our knowledge of immunology and certainly of allergy is today too limited to warrant burdening it with a multiplicity of new terms for the sake of the "working hypothesis" of any one man. If the critical reader will disregard this objection he will find in this section an excellent discussion of immunity as related to allergy and of the identity of anaphylaxis and atopy.

The latter part of this first section deals with the methods of diagnosis and with the general methods and principles of treatment. Here much controversial material will be found. It starts with such a simple subject as the technic of performing intradermal tests (p. 237). Among the precautions advised by the author are that no two biologically related substances should be used simultaneously for testing. This would be acceptable as justifiably cautious if the author had not selected as his examples goose and chicken feathers. Feathers are among our weakest allergens. Systemic reactions to them are either rare or unknown. A less understandable error in this section is the advice to withdraw the plunger (intracutaneous tests!) and observe for blood as a precaution against the needle being in a blood vessel before injecting the materials. A dermatologist of Urbach's experience could not have written such advice except through inadvertent error.

More serious than these objections is the emphasis on "deallergization" (primarily by oral therapy) as a method of preference over hyposensitization. Here Urbach emphasizes his use of protein digests, propeptans, to "deallergize" most allergic conditions. Despite the fact that Urbach introduced this form of "propeptan" therapy in 1930, workers in this country still have not accepted this method of treatment. Most reliable workers who have experimented with it reject it as a method of treatment, although they admit that their experience with this form of therapy is limited. Urbach's explanation of these carefully qualified but unfavorable reports is that these workers used their own protein digests rather than those prepared by Urbach (p. 268). This defensiveness is unjust to such careful workers as Bray, Rowe, Vaughn and C. J. White.

Part II, consisting of about 260 pages, is devoted to a thorough discussion of the etiologic agents of allergic diseases. The classic division used is that of inhalants, ingestants, injectants, contactants, physical agents and infectants. These subjects are likewise thoroughly presented. The part which the reviewer considers especially excellent is the discussion of allergy and immunity in acute and chronic diseases. The principles of allergy and immunity as revealed in the studies of tuberculosis and syphilis are particularly well correlated with what is usually classified as the "allergic diseases."

Finally, part III presents the symptomatology and therapy of allergic diseases. This part covers about 450 pages, of which the last hundred are relatively unimportant since they cover the more unusual and questionable allergic entities, as allergy of the eye, the ear, the nervous system, the cardiovascular system and the joints. In this section also the one serious objection the reviewer finds is the disproportionate importance placed by Urbach on oral therapy in such a condition as seasonal hay fever. From the material presented here the reader inexperienced in allergy cannot help but conclude that this is the method of choice both for ease, safety and for optimum results. This is certainly not accepted by most allergists in this country.

Summarizing, this is an excellently organized work presenting the literature of allergy in a very thorough and lucid fashion. It emphasizes a correlation of the principles of immunology as studied in chronic and acute infections with the immunology of the allergic conditions. The faults found in this book—the use of many unusual and newly coined terms and the overemphasis of the value of oral therapy—may well be disregarded by the critical reader in view of its general excellence.

Mass Miniature Radiography: A Practical Handbook. By R. R. Trail, M.C., M.A., M.D., Wing Commander, R. A. F. V. R., H. J. Trenchard, M.B., Ch.B., M.R.C.P., Squadron-Leader, R. A. F., and J. A. Kennedy, M.B., B.S., M.R.C.S., Flying Officer, R. A. F. V. R. Foreword by Lord Dawson of Penn, P.C., G.C.V.O., K.C.B. Cloth. Price, 8s. 6d. Pp. 96, with 24 illustrations. London: J. & A. Churchill, Ltd., 1943.

This book contains complete information for setting up and operating equipment for the making of miniature films of the chest. Chapters are devoted to administration, apparatus, processing and storage of films, viewing methods, interpretation, correlation of findings and consequent disposal of patients. The authors point out that the Canadian army has used full size x-ray films and that the Metropolitan Life Insurance Company of America has combined such films with fluoroscopy in mass survey work. The idea of photographing the image on a fluorescent screen on a photographic film was first attempted in 1896. However, it was not until 1934 that de Abreu of Brazil used it in making mass examinations. The authors describe two types of film now in common use; one 4 by 5 inches in size and the other approximately 1 inch square on a 35 millimeter film. They consider the former superior in technical excellence but prefer the 35 millimeter film for mass radiography because of greater speed with which exposures can be made. Attention is called to the use of these miniature films in the United States Army and Navy, and their value in the civilian population is emphasized. Their opinion as to the value of an x-ray film in diagnosis is expressed as follows: "Miniature films or large films are not generally speaking sufficient evidence on which to found a diagnosis. If they are so used the results are likely to be disastrous. Diagnosis must be based on a review of clinical, radiological and pathological evidence, and it is essential that this fact be ever borne in mind. In other words, mass miniature radiography is a means of picking out those individuals who are in need of a full, clinical examination." This statement was formulated after the authors had made 150,000 examinations including the follow-up to final diagnosis of those discovered to have abnormalities on x-ray films. The conclusion of these authors with reference to diagnosis coincides with that of clinicians who are expert in chest diseases in this country.

The authors call attention to the extreme tiring of the eyes and the mental fatigue which results when viewing miniature films. They find that 350 to 450 films represent the extreme limit that any one can be expected to do in a day, and that one hour of continuous viewing is the maximum that should be attempted. Clinicians who are beginning this work should not attempt the reading of more than 60 films at one session. However, as experience increases, one can read about 150 to 200 films at one time without experiencing extreme fatigue.

In the chapter on interpretation of miniature films they say "In the ordinary way miniature films cannot be described as diagnostic. They should not be considered as showing more than an abnormality which requires a large film and other investigations to ascertain the nature of the lesion present. Consequently, the report on a miniature film must usually be

limited to two alternatives. These alternatives are 'normal' and 'large film required.' The presence of a lesion should then be confirmed by a full sized x-ray film."

The authors point out that mass x-ray film inspection may also reveal evidence of nontuberculous infection such as abscesses, malignancy and fungous infection, as well as changes in the outline of the cardiac shadow. In the entire book nothing is said about the tuberculin test as a screen to determine who should have x-ray film inspection of the chest. This is probably because the authors assume that where they worked nearly 100 per cent of adults were infected with the tubercle bacilli. In this country, where 50 per cent or less of adults are infected, the tuberculin test has extreme value. However, the reactors need other phases of the examination for tuberculosis. A film of the chest which shows no evidence of disease often gives the individual a false sense of security, and he sees little need for subsequent film inspection of the chest, whereas a tuberculin reaction informs him that he has a potential case of clinical tuberculosis, and even though the film of the chest at the moment is clear he is easily convinced that periodic films are important. This is a good book, and the reader should frequently refer to the statement on page 3 with reference to the disastrous results which may follow attempts to make diagnoses from x-ray films alone, regardless of the size of film used.

Release from Nervous Tension. By David Harold Fink, M.D. Cloth. Price, $2. Pp. 232. New York: Simon and Schuster, Inc., 1943.

It is, perhaps, inapropos to review this volume for a scientific journal, since at best it must be relegated to the seemingly endless and wearying stream of popular "expositions" of that most abused and long suffering branch of medicine, psychiatry. To begin with, the book's breathless Sunday supplement style will probably offend the literate reader, whereas the informed one will resent its assertive naiveté ("Human beings have no instincts . . ."), its pretentious and often misleading pronouncements ("For sufferers from mental disease, Pavlov has sounded a veritable liberty bell. . . . To cure sick nerves, the patient must be dehypnotized") and the frequent lapses into gross misinformation ("[The] nervous center of our emotional life is called the interbrain. . . . Inspiration without expression leads to cell death within your brain"). Many of the "case histories," as the author indirectly admits, are obviously invented to suit the occasion, and even so reveal a superficiality of insight and interpretation that cannot but confuse and misguide the lay reader.

Fortunately, not all sections of the book are equally disappointing, since the basic theme of some chapters is that many bodily dysfunctions are the expression of emotional conflicts and tensions—a thesis quite in accord with the holistic principles of modern psychosomatic medicine. Conceivably, some readers may thus be induced to seek much needed psychiatric advice, although, unfortunately, most psychiatrists would be hard put to it to find the simple explanations and invoke the thaumaturgic cures described with such fervor in his own practice by Dr. Fink. Again, the author shows some appreciation of the dynamics of unconscious motivations, although he continually confuses them with a mysterious "subconscious" which resides in the "interbrain." But here are the curealls recommended in the final chapters: a ten weeks course of verbalized, self-hypnotic "relaxation exercises," regressive and even compulsive "play" activities, Korzybskiesque (though not so accredited) "control" of "words that are triggers to action" and the inevitable autobiographic cost and credit "self analysis" designed to reveal hidden "complexes [which are] really . . . conditioned reflexes." At the end of all this self-administered treatment the patient, according to the author, is ready for a "fresh start," which may involve sudden, untried and thoroughly disruptive occupational, marital and social changes. All in all, it is difficult to imagine a set of recommendations potentially more dangerous for the ruminating, anxiety ridden, impulsive neurotic who, even under the most competent and individualized psychotherapy, is notoriously apt to misinterpret and misapply his physician's analysis and guidance. But perhaps this is less an indictment of Dr. Fink's book than a lament for the morbid activity of that portion of our population of neurotics that creates an apparently insatiable demand for this type of pseudopsychiatry.

Edward Tyson, M.D., F.R.S., 1650-1708, and the Rise of Human and Comparative Anatomy in England: A Study in the History of Science. By M. F. Ashley Montagu, Associate Professor of Anatomy, Hahnemann Medical College and Hospital, Philadelphia. With a foreword by George Sarton. Memoirs of the American Philosophical Society, Volume XX. Cloth. Price, $5. Pp. 488, with 56 illustrations. Philadelphia: American Philosophical Society, 1943.

When an American scientist gives the Croonian lecture before the Royal Society of London for Improving Natural Knowledge he is paid from an endowment fund secured after William Croone's death, 1684, by Edward Tyson of Bristol and London, M.D., F.R.S., "founder of comparative anatomy in England," who laid the foundation on which was built Darwin's demonstration of animal evolution and the descent of man. Tyson was the first in England to institute the routine of systematic dissection and was one of the great protagonists of embryology, biochemistry and psychiatry. He "ranks with the immortals among anatomists" but has not been fully appreciated.

After the Puritan revolution in England of 1649 and after the restoration of 1660 some great spirits sought refuge from the fanaticism of religion, politics and scholastic philosophy in the direct study of nature. Inspiration had been given them by Gilbert, Bacon and Harvey, and for them the influence of tradition and authority had vanished. Their meetings for discussion founded the Royal Society. Among Tyson's friends in it were the crotchety Robert Hooke, the anatomic draftsman William Cowper, the selfless John Ray, Isaac Newton, Thomas Sydenham, Samuel Pepys and Robert Boyle. Tyson's contributions were many "preferring the language of artisans and countrymen to that of wits and scholars." Among the leading ones were the anatomy of the chimpanzee (pygmy), opossum, ostrich, lion, civet cat (Tyson's glands) and tapeworm. The publication of the first mentioned is "one of the outstanding landmarks in the history of science," Sarton.

Dr. Montagu makes these old times live again and makes these men our friends. We live with the bachelor Tyson from his boyhood days on the sea near Bristol to his death (from coronary occlusion?) aged 58 in London. He gives us their thoughts and their language and happily their quaint spelling: ostridge, pensil, phisitian, buigness, bruit, bloud, blew. One name may seem especially quaint to us, a Latin name Tyson gave to an American animal he dissected, "vipera caudisona," the rattlesnake.

It is very appropriate that this history of one of the early members of the London Society is published as a memoir of "The American Philosophical Society held at Philadelphia for Promoting Useful Knowledge." The form and presswork are beautiful. Dr. Montagu's work is so scholarly and sympathetic, so thoroughly and convincingly documented and illustrated that it deserves a place among the foremost American biographies of scientific men.

Regional Analgesia for Intra-Abdominal Surgery With Special Reference to Anethocaine Hydrochloride. By Norman R. James, L.R.C.P. & S., D.A. Cloth. Price, 6s. Pp. 57, with 27 illustrations. London: J. & A. Churchill, Ltd., 1943.

This book was written to increase the interest of surgeons and anesthetists in the use of regional methods of anesthesia in England. It is an excellent presentation of the value of anethaine (amethocaine hydrochloride, or what is known in the United States as pontocaine hydrochloride) as an agent for producing prolonged anesthesia. The method of preparing the solution, its mixture with epinephrine and the equipment that is used are all described. Supplementary narcosis, intravenous administration of omnopon (pantopon) and the use of oxygen and anesthesia by inhalation and by use of barbiturates are discussed. Thoracic nerve block is described, as is also splanchnic block, especially the posterior method of Kappis; infiltration of lines of incision and infiltration for suprapubic drainage as well as for other purposes are described. The toxic effects and prophylaxis in relation to amethocaine hydrochloride are described. General operative technic is discussed as well as cooperation between anesthetist and surgeon. Some modifications in operative technic are suggested to facilitate the use of local anesthesia. Application of the method in war surgery is described. A short index is included. This booklet is of pocket size and will be of interest to surgeons and anesthetists.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EARLY ABORTION, LATE ABORTION AND PREMATURE DELIVERY

To the Editor:—What is the dividing line in time of gestation between an early and a late abortion? The other day a baby was born in this hospital after six months' gestation, breathed a few times and died. One of the members of our record committee said that this should be classified as a late abortion. Will you please tell us if this is correct?

Katherine Lehman, R.R.L., Napa, Calif.

ANSWER.—The following criteria are widely followed and employed as definitions for these terms in the Standard Nomenclature of Disease: Premature delivery is to be diagnosed if any two of the following criteria are present: 1. The length of the gestation is from twenty-eight to thirty-eight weeks. 2. The fetal size is between 1,000 and 2,500 Gm. 3. The fetal length is from 35 to 47 cm. Late abortion is to be diagnosed in the event of delivery of a previable fetus if any two of the following criteria are present: 1. The length of the gestation is from twenty-two to twenty-eight weeks. 2. The fetal size is between 400 and 1,000 Gm. 3. The fetal length is from 28 to 35 cm. Early abortion is presumed to have occurred if any two of the following criteria are present: 1. The length of the gestation is less than twenty-two weeks. 2. The fetal size is less than 400 Gm. 3. The fetal length is under 28 cm.

This classification is arbitrary and not entirely above criticism. It does not relate to stillbirth or live birth certification. Occasionally an immature live fetus of twenty-six or twenty-seven weeks' gestation may survive and it would certainly be awkward for such a person to look back at his own history to find that he had been classified as a late abortion. It is probably better, however, to have such an unusual occurrence than to disclose a series of otherwise satisfactory definitions in order to try to cover all contingencies.

PREGNANCY RESULTING FROM COITUS OR ARTIFICIAL INSEMINATION

To the Editor:—A woman aged 28 had been married six years without pregnancy and had been "trying to get pregnant" by intercourse for about one year without result. Examination showed an enlarged cervix with mucous discharge, a crushed cervical canal and a definite uterine retroflexion. After treatment of the cervicitis with theramin suppositories and vinegar douches, the condition improved somewhat. Five examinations with the husband's seminal fluid, found to contain a normal number of normal appearing sperms, were done during a period of time extending from October 24 until January 15 of the next year, an attempt being made to choose a time during the latter part of the menstrual cycle. The last period was from January 22 to 29, just as expected, but with slightly increased bleeding; therefore there were doubt and pregnancy was diagnosed definitely on May 4, being about three months along. The patient has had regular unguarded coitus during the time of the inseminations. The periods previous to the last one had been of normal character. The patient feels that this pregnancy is due to inseminations. I am doubtful, owing to the period following a week after the last inseminations; still circumstantial evidence points to insemination rather than normal coitus as being the cause. What would your impression be?

M.D., California.

ANSWER.—If all of the inseminations were carried out during the latter part of the menstrual cycle as implied in the query and the woman's menstrual intervals were of the usual twenty-eight to thirty day type, it is practically certain that the pregnancy was not due to the inseminations but to the normal coitus. The reason for this statement is as follows: As far as is known, the majority of women ovulate only once a month and the ovum is expelled fourteen to fifteen days before the ensuing menstrual flow is to begin. An ovum lives for only about twenty-four hours, and unless it is fertilized within this time it dies. Spermatozoa are capable of fertilization for forty-eight to seventy-two hours. Therefore, in order for pregnancy to take place, living spermatozoa capable of fertilization must be present in the genital tract for at most forty-eight hours before the ovum is expelled and for only about twenty-four hours after ovulation has taken place. Since the unfertilized egg is capable of fertilization for only twenty-four hours, insemination of sperm in the latter half of the menstrual cycle is of no avail. If, however, a woman's menstrual intervals are thirty-five or more days long, insemination at the twentieth or twenty-first day of the cycle can result in pregnancy. This is because the ovum in such cases is expelled from the ovary on or about the twenty-first day of the cycle. In the determination of the day of ovulation, the preovulatory interval is of little significance. What is important is the number of days which elapse between ovulation and the ensuing menstrual flow, and this is usually fourteen to fifteen days.

DIAGNOSIS OF TYPE OF HYPERTENSION

To the Editor:—A man aged 36 developed hypertension following an infarct of the lung. The history goes back to one year ago when he was seized with severe pain in the lower right quadrant of the abdomen. Acute appendicitis was suspected. The consulting surgeon found the patient in a shocklike condition, with low blood pressure and feeble pulse, and receiving profusely. Renal colic was the tentative diagnosis. Urinalysis revealed many red cells in the sediment. White cell and differential counts were normal. Twenty-four hours later pain in the lower right quadrant of the abdomen was still present, muscle spasm was evident and there was an increase in the white cell count. Appendectomy was performed under nitrous oxide anesthesia. The pathologist's report was "catarrhal appendix." The patient was free from pain until the seventh postoperative day, when lodgment of an embolus in his right lung resulted in an infarct. Recovery followed in six weeks without any pulmonary residual. Two months later he returned to work but complained of pulsating headaches, nausea and anginal pains on exertion. The blood pressure at this time was 170/120 (right arm). The symptoms persisted for three months, and on reexamination he was found to have unequal blood pressure in his arms. After rest in bed for one month his average blood pressure was 145/110 (right arm) and 120/80 (left arm). In the erect position the blood pressure in both arms was 150/110. Other clinical findings during this time were as follows: grade 1 arteriosclerosis of the retinal vessels; electrocardiographic evidence of minimal myocardial damage and sinus arrhythmia; normal blood chemistry (sugar, chlorides, nonprotein nitrogen, creatinine); normal hemoglobin values, white blood cell count and differential count; negative Wassermann and Kahn reactions; normal results from urinalysis and culture of urine; normal results from the sedimentation test, the urea clearance test, the phenolsulfonphthalein test and the concentration-dilution test; normal x-ray appearance of the skull, the chest, the kidney, ureter and bladder, the heart and the aorta; normal intravenous pyelograms; x-ray evidence of four devitalized teeth previously treated by apicoectomy and root canal medication and showing no foci of infection. Other findings were psoriasis (chronic, stationary, nonprogressive) and a pectoral drip. The cold pressor test was within normal limits. Neuropsychiatric examination was noncontributory. During preparation for the intravenous pyelograms the patient was given 1 cc. of posterior pituitary injection of twice U. S. P. concentration intramuscularly. The symptoms previously complained of returned and persisted for three hours. At present the patient's blood pressure after prolonged rest in bed will be as low as 120/80. Limited activity in the erect position soon results in a blood pressure of 150/110. Anginal pains and nausea occur at infrequent intervals. During one such episode the blood pressure in his left arm for three consecutive readings was 135/110, 140/100 and 125/90. The blood pressure in the right arm was 150/120. The nausea disappeared in about fifteen minutes, and the blood pressure in both arms was found to be 150/110. Can the blood pressure be explained as a Goldblatt phenomenon? What is the significance of the variation in blood pressure in the arms and legs? Is it possible that he suffered renal infarcts as well as a pulmonary infarct due to his initial illness with the result that renal circulation is impaired sufficiently to cause hypertension? Any suggestions will be appreciated.

M.D., South Dakota.

ANSWER.—The absence of preexisting hypertension must be presumed, since previous levels are not recorded. In spite of the repeated differences of blood pressure in the two arms, the right arm showing higher levels while the patient is recumbent, this feature must be minimized, since equal levels (150-110) occur in the erect position, and this level seems to be basic on activity, especially since x-ray and physical examinations indicate that no aneurysm is present. If available, cutaneous temperature and oscillometer readings taken when significant variations were present would aid in determining if true circulatory inequality exists.

A degree of paroxysmal hypertension appears to be present. This may be caused by adrenal tumors (difficult to diagnose) or by postural hypertension, especially with a mobile kidney. It is true that in the vast majority of cases of renal prolapse or mobile kidneys no hypertension or Goldblatt mechanisms will exist, but there is an increasing number of authenticated cases in which such conditions or malposition of kidneys, with the pelvis not directed truly medially, in which case the renal vessels may be compressed or angulated in reaching the pelvis, will result in hypertension of the Goldblatt type.

In the case cited it would be impossible for renal infarction to have occurred directly from the primary (presumably pelvic) source, but the remote possibility of a secondary source (from the lung following primary infarction) cannot be disregarded. Apparently the right kidney was the seat of trouble (many red blood cells) in the first attack, and it may be the site of unilateral renal disease.

Another intravenous pyelogram, taken in the standing position, may reveal an unsuspected renal prolapse. It is significant that the pressures are higher when the patient is in the upright position than when he is recumbent. Should such a prolapse be found, a well fitted girdle or a renal belt with pads to keep

the kidney in place may be tried. If this is unsuccessful and elevations of pressure persist, nephropexy is justified, since otherwise persistent and progressive essential hypertension may be anticipated.

TREATMENT OF CONGENITAL SYPHILIS WITHOUT INTRAVENOUS INJECTIONS

To the Editor:—A girl aged 15 years has interstitial keratitis. I treated her in infancy for syphilis but the parents stopped the treatments before she was cured. She has had no treatment in the meantime. She weighs 230 pounds (104 Kg.) and it is impossible to find any veins in which to give intravenous therapy. Will you please outline the treatment this patient should have? All treatment will have to be intramuscular or by mouth. M.D., Iowa.

ANSWER.—In view of the impossibility of administering intravenous treatment to the patient, a girl aged 15 with congenital syphilis and interstitial keratitis, the best plan of treatment would be initially with induced tertian malaria during which the patient is allowed to have ten to twelve paroxysms of fever, followed immediately on its termination by bismuth arsphenamine sulfonate (bismarsen) administered intramuscularly twice weekly in alternate buttocks in a dosage of 0.2 Gm. to a total of twenty injections in the course. On completion of the bismarsen course, bismuth subsalicylate in oil should be given intramuscularly for eight to twelve weeks in a dosage of 0.2 Gm., the injections being given at weekly intervals. Potassium iodide should not be used.

Further than this it is impossible to plan without knowing the results of the suggested treatment on the interstitial keratitis. More treatment must be given, but its character will depend on the therapeutic result obtained.

ROENTGEN IRRADIATION FOR MASTOIDITIS AND OTITIS

To the Editor:—Has the x-ray radiation treatment of acute mastoiditis and otitis media ever been used in the majority of ear clinics in the country? What is the present status of this treatment?

Nathan Sodofsky, M.D., Otsen, N. C.

ANSWER.—X-ray radiation therapy for acute otitis media and acute mastoiditis has never been widely used in the majority of ear clinics in this country. There has been no fundamental change in opinion as to the way these diseases are to be handled. It is no doubt true that here and there individuals have tried x-ray therapy. In properly selected cases gratifying results have been obtained.

It would be impossible however, without a poll of all the major clinics in the country, to know how many of them have used x-ray treatment in the conditions named and to what extent they have employed it. Judging by one large community it is not used extensively nor is it the treatment of choice.

In early cases x-rays may be used properly empirically and experimentally. It is precisely this type of case that yields so well to sulfonamide therapy, however, and which has a high incidence of natural recovery. There can be no useful outcome in debating the merits of special therapy under these circumstances. Able practitioners working under proper controls and using good judgment may try at times any reasonable method of therapy.

NORMAL PYELOGRAM IN PRESENCE OF IMPAIRED RENAL FUNCTION

To the Editor:—A woman was admitted to the urologic service because of numerous red and white cells in the urine. In the course of a routine examination the resident said he found a large kidney on the left side in addition to a few white and red blood cells in the urine. An intravenous pyelogram was of little assistance in making a diagnosis as little dye appeared on the left side. Cystoscopy revealed a normal bladder and ureters; the latter were readily catheterized for a distance of 25 cm. The urinary outflow was normal on both sides. A functional test was normal on the right, the dye appearing in six minutes. No dye appeared on the left side in twenty-five minutes. A retrograde pyelogram was made, 10 cc. being injected on both sides with no pain. A roentgenogram shows normal outline of both kidneys. Would you kindly explain the poor function of the left kidney in view of the normal retrograde pyelogram?

M.D., New York.

ANSWER.—Failure of visualization of the renal pelvis on one side occasionally is observed in the excretory urogram for which there is no adequate explanation. In a few of these cases, when a subsequent excretory urogram is made after an interval of several weeks or months the visualization will have become normal for no apparent reason. In many cases failure of visualization can be explained by temporary obstruction in the ureter, often a small ureteral calculus, which is nonopaque and is not visualized in the plain roentgenogram. Such a calculus might also be the cause of the red and white cells which appeared in the urine in the case in question. The fact that the ureteral catheter when introduced met with no obstruction would not exclude a calculus. In fact, the failure of secretion of dye from that kidney in the presence of normal secretion of fluid would tend to corroborate the hypothesis of reflex irritation or slight obstruction caused by intraureteral blockage. Such obstruction may be sufficient to interfere with renal function but still cause no visible deformity in the outline of the renal pelvis or ureter. In most of these cases of ureteral blockage the outline of the kidney in the plain roentgenogram appears somewhat larger than that on the other side, apparently due to congestion.

There may, of course, be some kind of intrarenal lesion present. An infarct or some other type of cortical lesion might also cause failure of secretion of the dye without visible deformity in the pelvic outline. Repeating the differential functional tests and the excretory urograms at intervals would be of considerable interest.

POSSIBLE EFFECTS OF EPINEPHRINE AND EPHEDRINE ON CUTANEOUS TESTS WITH ALLERGIC SUBSTANCES

To the Editor:—A patient with hay fever is relieved by an ephedrine-amytal capsule. Are the cutaneous tests interfered with if this capsule is used immediately preceding the tests? H. F. Kohler, M.D., Tacoma, Wash.

ANSWER.—Swineford and Grove (*J. Allergy* 8:475 [July] 1937) have pointed out that the maximum effect of an injection of epinephrine on the size of cutaneous tests occurs within fifteen to thirty minutes and is gone in an hour or less. They therefore believe that it is not necessary to postpone these tests longer than one hour after a single therapeutic injection. When the patient is receiving frequent injections of epinephrine, however, especially if given in oil, cutaneous tests are certain to be lessened in size and should not be performed at that time.

There is no definite report in the literature on the effect of ephedrine on cutaneous tests, but since ephedrine acts in similar fashion to epinephrine it too almost certainly diminishes the size of cutaneous tests. This is especially important with patients who take ephedrine more or less continuously.

It would be wise to avoid both ephedrine and epinephrine for at least twenty-four hours before the tests are carried out.

EPIDIDYMITIS FOLLOWING STRAIN

To the Editor:—Could you give me the pathology of a condition which I have been seeing frequently in the past two years but which I do not find described in textbooks on urology? It occurs only in laborers, usually doing heavy work, who give a story of having felt a sharp pain in the lower part of the abdomen on one side or the other while straining as in lifting a heavy weight, the pain frequently radiating down the spermatic cord to the testis. The following day the spermatic cord and sometimes the epididymis is also swollen, hard and tender. Sometimes only the upper pole of the epididymis is involved. It is hard to say there is any evidence of gonorrhea that is found, the condition being apparently traumatic in origin. Pain and tenderness vary in severity, and the condition gradually subsides in about two weeks' time. As far as can be made out by physical examination, it appears to be the vas deferens itself which is thickened and tender. Torsion begins with a severe pain which lasts for a considerable period. The cord is always swollen, indurated and tender. In fact, the resulting lesion is pyriform from above downward, as frequently the cord and only the upper part of the epididymis are involved. I have seen so many cases of this condition that I regard it as a clinical entity.

M.D., Puerto Rico.

ANSWER.—As nearly as can be determined from the description, this is an acute epididymitis. The history is typical, namely pain in the lower part of the abdomen on one side or the other and frequently radiating down the spermatic cord to the testis, followed by changes in the epididymis, the epididymis being tender, hard and swollen. The fact that these cases show no evidence of gonorrhea is irrelevant.

Most urologists believe that when a patient develops an epididymitis he has infection in the seminal vesicles. This infection may or may not be gonorrheal in origin. As a matter of fact most cases of seminal vesiculitis and chronic prostatitis are nongonorrheal in origin.

Acute and chronic epididymitis that fit into this category are described in textbooks on urology. How much one should ascribe the onset of the condition to the lifting of heavy weights is open to question. If persons do not have a previous infection in the vesicles and lift a heavy weight, nothing would happen.

The second possibility is torsion of the spermatic cord with torsion of the testis, but the description given does not fit in with torsion of the spermatic cord. This condition has been written up a good many times in the *Journal of the Urology* within the past ten years.